NOV 14

PAPER TRADE JOURNAL

NOVEMBER 9, 1944

Established 1886

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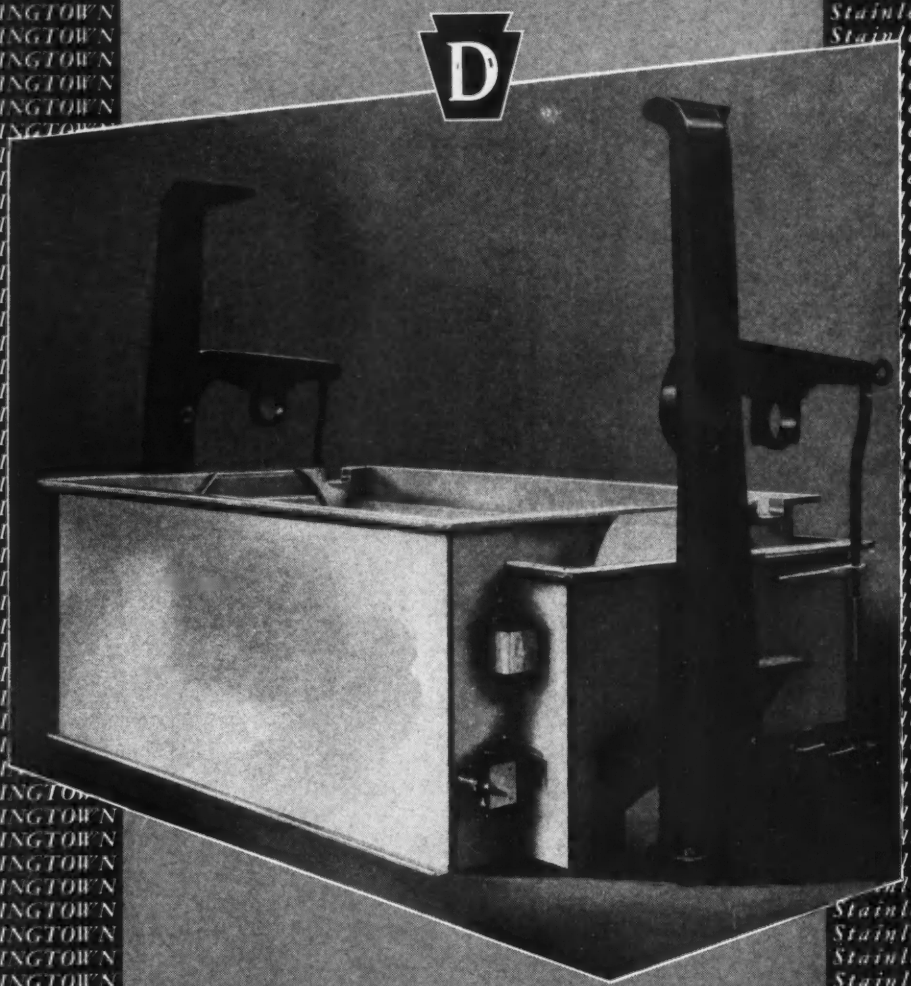

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PAPER TRADE JOURNAL

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Established 1872

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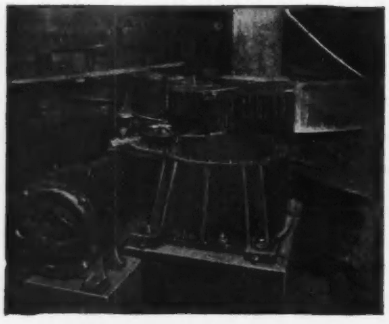
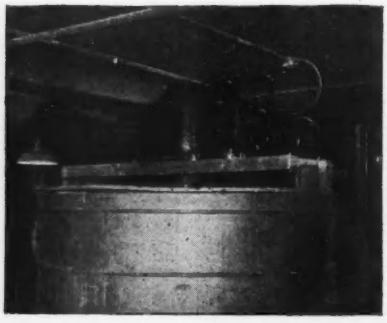
THESE machines fill a long felt need for double reduction units of the fully enclosed type to be used for agitators, mixers, ore roasters, bending rolls, etc., requiring a vertical shaft drive. Built in standard ratios in various types of assemblies ranging from 40 to 1 to 250 to 1 for all common motor speeds and a wide range of horsepower ratings.

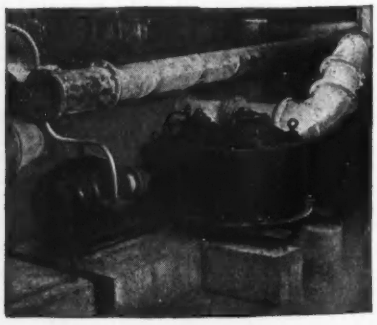
Jones Bulletin No. 75 covers complete details on these Worm-Helical Speed Reducers, with rating tables, dimension diagrams, torque charts and other application information. We shall be pleased to send you a copy.



• Jones Worm-Helical Speed Reducer on ore roaster with section of dust guard removed to show final gear reduction.



• Jones Worm-Helical Speed Reducer driving a lacquer agitator. A simple design prevents leakage of oil along the vertical low speed shaft.



• Jones Worm-Helical Speed Reducer on a paper mill agitator drive.

W. A. JONES FOUNDRY & MACHINE CO., 4443 Roosevelt Road, Chicago 24, Illinois

Vol. 119, No. 19

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

November 9, 1944

Study Course Opens For Paper Mill Workers

Vocational Schools In Five Wisconsin Centers Will Conduct Evening Classes For Period of Three Months—Whiting Co. Workers Dispute Contract—Union Application Denied—Other Late News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., November 6, 1944—A non-technical course for pulp and paper mill workers has been arranged by vocational schools in Neenah, Menasha, Kaukauna, Kimberly and Appleton, Wis., beginning Wednesday, November 8, at the Appleton school, it was announced last week by Carl G. Bertram, director at Appleton.

All classes will open at 7:30 on Wednesday evenings over a period of 12 weeks. Some sessions will last 1½ hours and the others for two hours.

Mr. Bertram said enrollment has been so large that duplicate sessions had to be arranged and another class will open at the Menasha school Nov. 15. Those working at Kimberly, Kaukauna and Appleton will attend the Appleton sessions and those working in Neenah or Menasha will go to classes in Menasha.

The schools worked with an advisory committee from industry in arranging the course and obtaining lecturers. The committee included John P. Reeve, L. J. Smith, H. P. Dixon, Jr., T. R. Probst, A. Phillips, F. F. Martin, Walter Strong, I. J. Stafford and L. C. Smith.

Over 300 persons have enrolled for the course to date and there still is room for additional registrations. To be eligible, enrollees must be working in the pulp and paper industry, Mr. Bertram said.

Among the lecturers who will cover most phases of the industry will be A. G. Wakeman of Kimberly-Clark; Dr. Otto Kress, of the Institute of Paper Chemistry; John G. Strange, of the Institute; Dr. Loren Forman, Institute; R. F. Rogers, of Kimberly-Clark; L. J. Smith, of Combined Locks Paper company; W. H. Swanson, of Kimberly-Clark; P. H. West and M. L. Downs, of Thilmany Pulp and Paper company; H. P. Dixon, Jr., Fox Rover Paper corporation; T. R. Probst, Gilbert Paper company; S. D. Wells, of the Institute; F. X. Kreiling, Thilmany; I. J. Stafford, Neenah Paper company; Harold Johnson, Fox River; A. Wiberg, Gilbert Paper; Fred S. Seaborne, Kimberly-Clark; P. H. Tigwell, Beloit Iron Works; Mr. Downs, I. W. Kersten, Kimberly-Clark; J. B. Catlin, Kimberly-Clark; Richard K. Neller, Kimberly-Clark; Arthur Haselow, Gilbert Paper; J. A. Foley, Kimberly-Clark.

Leo E. Croy Addresses Kiwanis Club

Because of Marathon Corporation's position as a supplier of packaging to the food industry, it has an excellent foundation for future progress, Leo E. Croy, vice-president, told the Neenah Kiwanis Club last week in an address at the Valley Inn, Neenah, Wis. He pointed to a number of new markets which Marathon is prepared to serve after the war with new and improved packaging.

Mr. Croy said that 45% of all the industrially employed persons in Menasha are working for Marathon, and employs a total of 1,361 persons. Employment and pay rolls have tended upward for the last 12 years, he asserted. He also discussed Marathon's plans for construction of a modern sulphate pulp mill at Peninsula, Ontario, Canada. He asserted that work now is underway and probably will be completed early in 1946. The mill will have a capacity of 250 tons of pulp daily.

Whiting Workers Dispute Contract

After failing to agree on terms of a union contract, 65 employes of the Whiting Paper Company, Menasha, Wis., members of the International Brotherhood of Papermakers walked out on strike late Wednesday, November 1. The mill remained closed the last three days of the week.

Differences between the company and the union involve a union membership clause, two-weeks vacations after five years of service, adjustments in wage rates to eliminate inequalities, and "call time," a problem which arises when men of other shifts are called in to repair paper machine breakdown.

Grants M. A. Degrees in Absentia

The master of arts degree was granted in absentia October 29 at Lawrence College, Appleton, Wis., to the following students of the Institute of Paper Chemistry, which is affiliated with the college:

George E. Chamberlin, who holds the bachelor of science degree from Iowa State University; John W. Dappen, from Grinnell College, Iowa; William H. McPharson, Jr., from Syracuse University, New York; Sewall T. Moore, from the University of North Carolina, and Philip E. Nethercut, from Beloit College.

Paper Institute Adds Two Trustees

Two new members were named to the board of trustees of Lawrence College last week. John Strange, Appleton, who is secretary of the Institute of Paper Chemistry and former Lawrence alumni trustee; and the Rev. Schuyler E. Garth, Methodist bishop of Wisconsin, who succeeds the Rev. Ralph S. Cushman, Methodist bishop of the St. Paul area, who has been a member of the board since 1939. Mr. Strange fills the vacancy created by the death last July of Ben Alexander, Wausau, Wis.

Canada Lifts Some Restrictions on Paper

Wartime Board In Removing Curb On Certain Printed Matter States Supply of Print Paper Is Inadequate—General Supply Situation Unchanged — Paper Board Controls Eased — Other News.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., November 6, 1944—While still urging strict economy in the use of print paper, arrangements have been made by the Wartime Prices and Trade Board to lift the restrictions on the manufacture of certain types of printed matter and to revise quota controls on periodicals and publications. Mill quotas, however, will continue to limit any increase in paper consumption. It is pointed out by the Board that there is little prospect of any immediate improvement in the general paper supply position, but each purchaser of commercial printing now will be free to make use of the paper available to him as he sees fit.

Restrictions have been removed on the use of newsprint and fine paper for display and other advertising printed matter, posters, catalogs, price lists and other business forms and records. Under restrictions introduced last December, extensive economies were effected. The board said, however, that it was "anticipated that many of these savings will be continued voluntarily."

Effective November 1, publications and periodicals in which advertising provides the principal revenue and which are published by non-profit organizations may obtain, on application, certificates of exemption provided they do not use more than four tons of paper each calendar quarter. The previous exemption was one ton of standard newsprint a quarter.

Other publications and periodicals under permit control may, on application, be granted an increase of four tons a quarter in their current quotas. New publications may be granted a similar tonnage on application.

"The supply of print paper is not adequate, however, to meet the potential demand for the less essential kinds of printed matter, and each user will be well advised to make certain that his essential requirements are filled first.

"Strict economy in the use of print paper is still necessary. Book publishers should establish priorities in their own production to ensure the supply of text books and other essential reading matter."

The revision leaves unchanged the provision that no newspaper, periodical or other publication subject to board orders 223 and 295 may be published except under permit, and the printer is required to obtain the permit number from the publisher.

Order 332, now revoked, covered a wide field of restrictions. Mill production quotas, which will continue to limit an increase in paper consumption vary, depending on the types of paper. They are adjusted from time to time to make allowance for the supply and demand situation, being increased for some types of paper and decreased for others.

The revision does not change the paper tonnage available to Canadian users in relation to that exported to the United States.

Under an arrangement made December of last year, Canada provides the United States with pulpwood at the rate of 1,100,000 tons a year, based on a total estimated pulpwood cut of 6,500,000 tons.

Paper Board Controls Eased

The Prices Board has announced relaxation of quotas and prohibitions on the use of paper board for shipping containers.

The board said the action had been made possible by increased paperboard shipments and a reduction in some districts in the demand for shipping cases for war goods. The board's order setting production priorities to ensure shipping cases for essential war and civilian uses remains in effect.

Unrestricted use of paper board containers now is permitted in packaging soups, dairy, cereal and bakery products. The list of commodities for which new shipping containers are completely denied has been reduced from 56 items to 13.

The board also announced lifting of restrictions on styles of wallpaper. An order which reduced wallpaper styles by 20% and prohibited any new styles has been revoked.

Improvement in Logging Equipment

The Canadian Timber Controller states that the situation as relating to the supply of trucks and tires and other equipment which are vital necessities in lumbering and pulpwood operations shows much improvement. With additional equipment it is expected the lumber industry will be able to meet the demands of war industries and keep up supplies to Britain and the United States. The lumber shipments to the United States are to continue in 1945 as in 1944. Explaining the export quotas to the United States, he said the system had been established because the market price in the United States is higher.

J. P. Rolland is Well Known

Jean P. Rolland, who was recently elected vice-president of the New York-Canadian division of the American Pulp and Paper Mill Superintendents' Association, represents in the management of the Rolland Paper Company the fourth generation of a family which for 62 years has played a leading roll in the fine paper industry in Canada. The Company's mill at St. Jerome, in the Laurentian mountains north of Montreal, was built in 1882, and was the first fine paper mill to be established in Canada. It has always been under the direction of the Rolland family, and John P. Rolland, its present manager, is the great grandson of its founder. The Financial Post, in setting forth the above says:

"Besides Jean Paul, the fourth generation is represented in the company by: Marc Rolland, superintendent of the St. Jerome mill; Andre Rolland, purchasing agent; Lucien Rolland, engineer of the Mont Rolland mill; Jacques B. Rolland and Albert Rolland, who are active in the sales division.

"Among employees in the Rolland mills are some whose family associations with the company reach back to its beginning in 1882 and who represent the fourth generation of loyal employees. There are many instances of three generations of one family all working in the mills at the same time.

With the dawn of Victory~planes and ships returning home—every American industry that has had a part in war production will have the deep satisfaction of having done a stupendous job well. We, who have turned our facilities into the making of essential war matériel, have learned lessons—have gained new and valuable ideas that will enable us to give greater services in the designing and building advanced finishing machinery for the great paper industry.

B. F. PERKINS & SON, Inc.
ENGINEERS AND MANUFACTURERS
HOLYOKE, MASS.

A New Development for Increasing Power Transmission Efficiency in Paper Mills

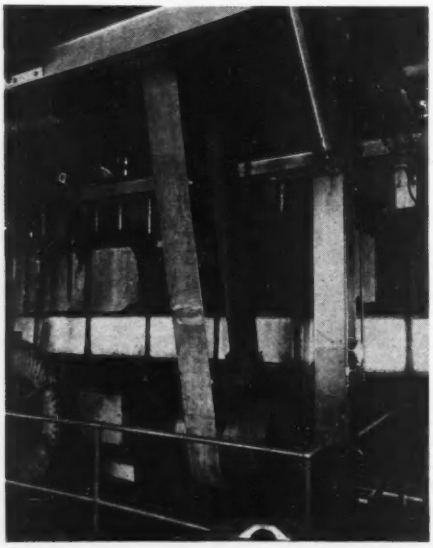
By R. E. Cook of Alexander Bros.

Now and then we have to revise or reverse our opinions and in this study we show that paper mill cone belts are not following accepted rules of engineering practice. At slow speed a cone belt follows the rule fairly close, but this is not true in cases of high belt speeds, and we shall try to show the reason.

Function of a Cone Belt

The function of a cone belt is, of course, the transmission of power from one cone or tapered pulley to another, permitting speed variations as the belt is shifted on the tapered pulley from one place to another. Usually this movement or shifting is done with a shifter fork or a shifter arranged with ball bearing spools or small grooved rollers.

The belt is usually held in the desired position at or near a definite point on one of the pulleys, leaving the belt free on the other pulley and, in many cases observed, we have noticed belts "hunting" (weaving back and forth) or trying to find some one place at which to pull. Let's call it instant of contact. This weaving back and forth naturally causes two objectionable effects, one being a slight variation in speed transmitted and the other a tendency to stretch the belt each time it climbs to the high side or toward the larger diameter at the free end. Remember that the belt is held in place by the shifter fork, on one pulley, and the "climbing" is on the free end. In the paper industry, especially in some of the newer plants where paper speed is very high, any variation in speed is magnified and any loss of time occasioned by stretchy belts is most objectionable, particularly in the draw.



INSTALLATION AT SCHMIDT & AULT PLANT

Showing 14-Inch Specially Constructed three-ply cone belt installed November 10, 1941 and Still Operating. Previous Belts Lasted Approximately Nine Months.

The usual leather belt, and the same is true of fabricated belts, is intended and constructed for what we call "straight line" work, where the lines of force are direct or parallel to the belt, but a far different condition is true where tapered or cone pulleys are in use. In such cases the lines of force are definitely at an angle, or from the high side of one pulley to the high side of the other.

To define or locate the point on two cone pulleys where the belt tries to pull, we used the term "instant of contact" because there is or should be some definite point across the width of the cone belt where the load is taken and if the elongation or stretch in either leather or fabricated belt is normal across the width of the belt there can be no defined or fixed instant of contact.

To amplify the thought, let's consider placing a 12 inch band saw or steel belt on cone pulleys. The instant of contact or the point at which power is transmitted would be at the high side of one cone or pulley, and likewise at the high side of the other pulley with the lines of force or tension running at an angle through the steel, or non-elastic material. The "instant of contact" would be of almost pinpoint precision very much as if a cord were placed around the pulleys.

More Constant Speed

By using a material low in stretch or elongation and so constructing a belt of this material that the instant of contact or pulling point can be spread somewhat across the width of the belt, we may have a more constant speed, less weaving back and forth "hunting" a pulling point and more power for a given width of belt, with less tension, meaning less annoyance from stoppage for take-ups, also less irregularity in the draw.

It has been found that two plies of firm leather can be so cut that the less elastic leather can be assembled to lay in a direct line (line of force) from the higher side of one pulley to the higher side of the other pulley, with a third ply of softer leather to contact the pulleys. The use of a soft finished leather for the inner ply has a definite purpose. At the point of greatest pulley contact, that is, on the high side of each pulley, the tiny wrinkles (often called creep in ordinary belting) are compressed and flattened out and an undetermined amount of creep is absorbed at that point, while the soft finish tends to spread the pulling point further across the width of the belts. To better illustrate this very important point, look at the palm of the hand and particularly the inner side of the fingers and note how the soft padded area affects the grip. This would not be true if hard, harsh, glazed skin should be the coating.

Cone Belts Tested at All Speeds

In doing an immense amount of research work along this line, we had the opportunity of testing cone belts at speeds all the way up to 7,000 feet per minute and it was observed that at belt speeds around 1,000 feet per minute the leather seems to have time to react and adjust itself so that it will—let's say

GIVE KNOCKOUT DROPS TO MOLD!

DOWICIDES CONTROL
Mold Decay Termites

The Dowicides are a group of seventeen related germicides and fungicides that meet practically every requirement of industry in combatting the effects of bacteria and fungi.

Dowicides are the result of many years of research. They have proved themselves so effective in controlling mold that today they are used in many major industries. They prevent mold and bacterial growth even under the most severe conditions.

Dowicide is widely used in the paper industry. Sprayed onto lap stock as it emerges from the lapping machine, it prevents formation of black or bluish mold that otherwise manifests itself in the finished product. Added to stock chests, it eliminates souring of pulp slush which occurs because of the presence of natural foodstuffs.

Paper used in wrapping products having a high moisture content is also fortified with Dowicide since such packaged products often raise the moisture content of the wrappings to over 12 or 14% at which point fungi grow very rapidly.

Other uses in the paper industry include protecting machine felts and preserving adhesives.

Write the Dowicide Division for further information that will help you give mold a knockout blow!

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MIDLAND, MICHIGAN

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Among the many Dow products serving the Paper Industry are: Methocel, Ethocel, and Caustic Soda.

DOWICIDE

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CHEMICALS INDISPENSABLE TO INDUSTRY AND VICTORY

stretch—on the high side of the pulley and lie practically flat on the incline or taper. This is absolutely untrue of fabricated or harsh leather belts.

At the beginning of this article, we mentioned we have a condition in the case of cone belts that reverses ordinary engineering practice. Wide cone belts are known to give less power than narrow belts under certain conditions, hence the statement that we are reversing ordinary engineering practices.

On the face of it, it looks like a foolish statement because it is ordinarily assumed that in a belt of a given width as the speed increases in travel or feet per minute with certain limits, the power transmitted increases almost in like proportion, but this is definitely not true in cone belts.

A drive designed for low belt speeds with a belt of a given width will somewhat follow the usual tables for power calculations, but when this same belt is run at high or excessive speeds, it stiffens and is thrown away from the low side of the pulley as though it were curling up, and at around 7,000 feet per minute there is probably only 50% of the belt in any contact with the pulley. The result is the belt has to be wider or run under abnormal or destructive tension for these high speeds.

Lower Belt Cost Per Ton of Paper

We have found it much more sensible to construct a belt with the greatest resistance of the leather lying in the direction of the line of force, using a soft leather for the inner side or ply. With the tables we have formulated for excessive speeds and with the use of a belt wide enough so that there is sufficient portion of the belt in actual contact with the pulley, the result will be less tension with less stretch, uniform speeds, and a lower belt cost per ton of paper produced.

Patent No. 2,200,266 has been granted covering the unusual method of manufacturing these special cone belts, and assignment has been made to Alexander Brothers, 406 North Third street, Philadelphia, Pa.

Lily-Tulip to Buy Universal

The Lily-Tulip Cup Corporation has agreed to acquire the entire capital stock of the Universal Paper Products Company in exchange for 24,000 of its no-par common shares. It will enter the investment on its books at $699,000, based on the average price of Lily-Tulip stock on the New York Stock Exchange on October 17, the date the proposal was accepted, the company announced.

National Paperboard Assn. To Meet

The National Paperboard Association will hold its annual meeting at the Waldorf-Astoria Hotel, New York, Thursday and Friday, November 16 and 17. An interesting and important program for the meeting has been arranged and all members are urged to attend and participate actively in the proceedings.

Sweetheart Paper Products Incorporates

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., October 30, 1944—The Sweetheart Paper Products Company, Inc., 54 Auburn street, Chelsea, Mass., has been incorporated with a capital stock of $60,000; 1,000 preferred shares. President, Arnild Shapiro; treasurer, Samuel N. Shapiro, clerk, Milton Bornstein, all of 187 William street, Chelsea.

Failure-Proof Formula For Recausticizing:

come to DORR

To date, the Dorr Company has made over 65 recausticizing *equipment* installations including repeat orders and 17 complete Dorr recausticizing *plant* installations in the United States and Canada.

The wealth of pulp mill engineering experiences behind this 20-year record is at the disposal of paper mill operators now getting priorities for equipment to step up production.

Without any obligation or cost to you we would like to discuss with your engineers: what we have done at the above plants; the general flowsheet of a Recausticizing System; the Dorr equipment used, its methods of operation and the overall savings that can be expected.

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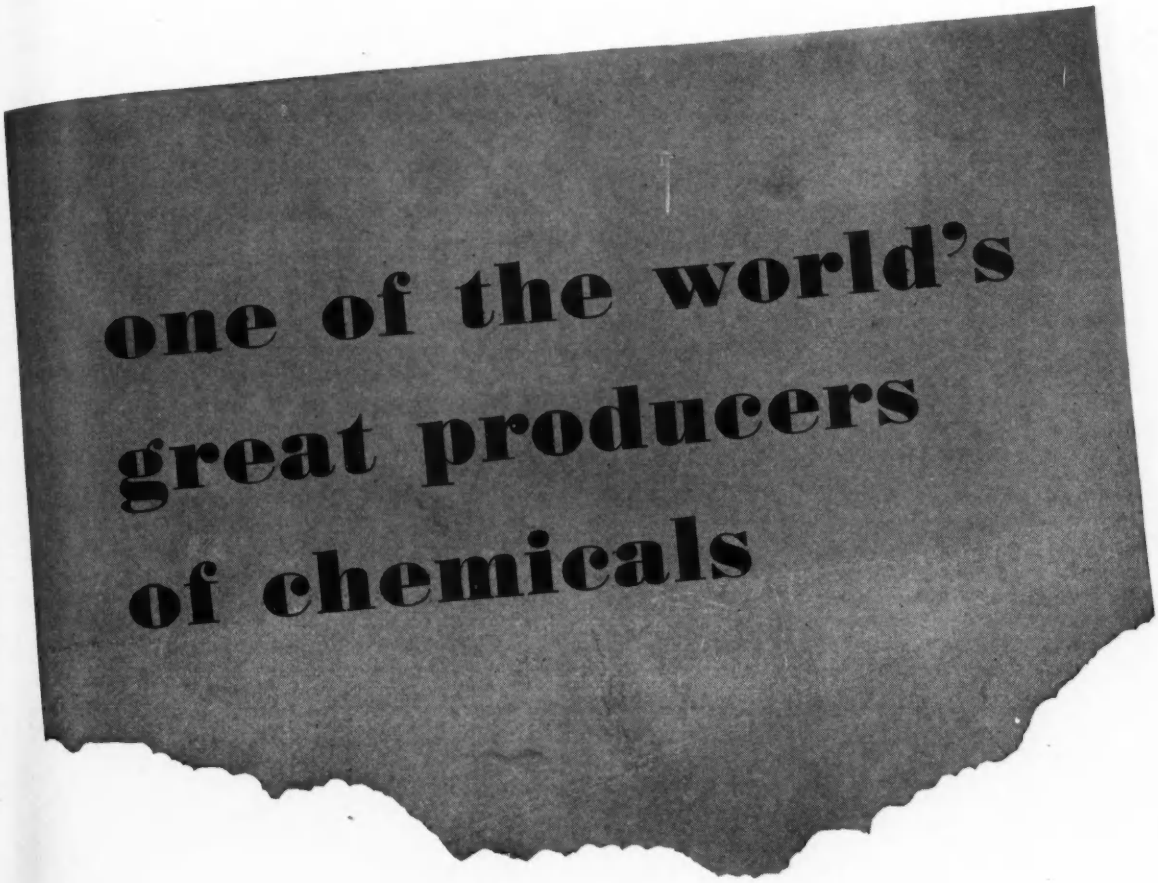

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CALCIUM CARBONATE • CALCIUM CHLORIDE • CHLORINE

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VITAL TO VICTORY TODAY—READY TO WORK FOR A GREATER TOMORROW

Acquires Algonquin Paper Corp.

The B-F-D Company, manufacturers of wood and paper specialties, with principle offices at 155 East 44th street, New York City, purchased on November 1 the Algonquin Paper Corporation of Ogdensburg, N. Y. The Algonquin property consists of a groundwood mill with daily capacity of 110 tons, and a sulphite mill rated at 100 tons per day. These facilities have not been in operation for several months, but B-F-D Company expects to resume the manufacture of pulp at Ogdensburg as soon as an adequate supply of wood is available there.

Immediate plans call for utilizing the supply of wood pulp from the Ogdensburg mill at B-F-D's Plattsburg, N. Y. paper mill. Eventually, the company intends to install at Ogdensburg paper making and paper converting equipment to a degree that will make the newly acquired property an integrated producing unit for household paper items distributed by the Diamond Match Company. This production will be in addition to the output of the Plattsburg mill, which is and will continue to be sold to its trade by Diamond Match Company.

Prepare New Abitibi Plan

TORONTO, Ont., November 6, 1944—It is now generally expected that a workable plan for the reorganization of Abitibi Power and Paper Company, Ltd., will be formally prepared and finally announced to the public, though just when is only a guess and depends upon how long it will take the participants and proposers of the plan to work out the details in accordance with agreements reached last week.

A substantial measure of agreement was reached between representatives of holders of Abitibi's 5% bonds, of the 6% preferred stock and of the common stock as a result of long meetings with the Ontario Government's three-man committee, appointed in September, 1943, to formulate a course by which the company might be taken out of receivership. This agreement represents the culmination of a long series of meetings with representatives of all classes of security holders which have been held during the past few months in order to get the viewpoint of each group and to attempt to obtain a compromise between the sharp differences of opinion of the various groups.

To reach any sort of an agreement, some compromise must have been obtained on the question of interest on interest and also on the question of payment in United States funds.

The "Financial Post" says "It seems reasonable to expect that the bondholders might waive their claim for interest on interest and perhaps might even reduce their claim more than this."

Members of the Government Committee are: Hon. F. J. Hughes, K. C., Gilbert E. Jackson and William Zimmerman.

To Honor Samuel T. Baron

Samuel T. Baron, president of the Royal Paper Corporation, will be guest of honor at the annual dinner of the Graphic Arts and Fine Paper Division of the Federation of Jewish Philanthropies, which is to be held on Wednesday, November 29, at 6:30 P.M. at the Harmonie Club, 4 East 60th street.

The affair, which is being sponsored also by the Stationers and Office Supply Division of Federation, will highlight the two divisions' efforts on behalf of the current Federation campaign benefiting 116 charitable institutions. More than 200 members of the industry are expected to attend.

1 ONCE A SAILOR FROM PAGE 47
MET A GIRL FROM PAGE 48;
THOUGHT, "AT LAST I'VE LANDED IN HEAVEN,"
PROMPTLY ASKED, "MAY I HAVE A DATE?"

2 SHE SAID "YES," AND THEY GOT ALONG NICELY
TILL THE PAPER MAN SAID, "I FEAR
THIS SAILOR WILL MISS SHIP UNWISELY
IF HE TARRIES MUCH LONGER HERE."

3 SO INTO THE STOCK HE PUT "TI-PURE" PIGMENTS,
PIGMENTS THAT MADE THAT SHEET OPAQUE;
THE SAILOR LOST FANCY'S SWEET NEW FIGMENT—
BUT HE MADE HIS SHIP—AND ALL WAS JAKE.

Conclusion:

To keep printed matter from showing through, "Ti-Pure" pigments are the ones for you!

DU PONT "TI-PURE"

Titanium Dioxide

for opacity, whiteness and brightness

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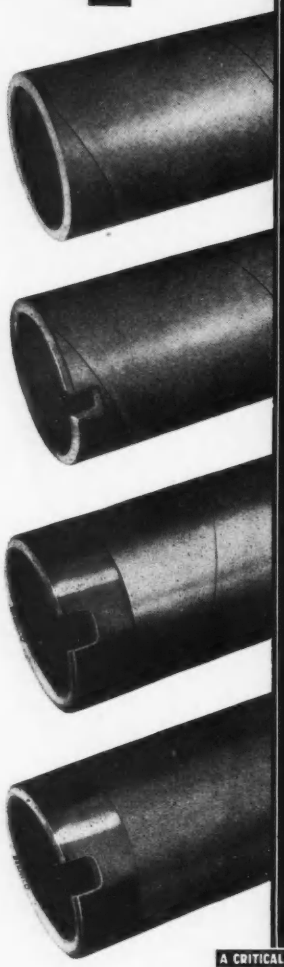
BETTER THINGS FOR BETTER LIVING . . . ***Through Chemistry***

4 GRADES SONOCO PAPER MILL CORES



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For all uses requiring an extremely tough non-returnable paper mill core.

DURO—Standard returnable core of plus-standard quality. Shown with Taylor ends. Also available with Bermico ends.

ENDURO—Very high grade returnable core to meet extra demand for strength. Shown with Bermico ends. Taylor ends available.

BERMICO*—Returnable fibre core—extremely hard, strong and rugged. Treated to resist weather and moisture changes.

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Exclusive distributors for Bermico Ends and Bermico Fibre Cores.

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DEPENDABLE SOURCE OF SUPPLY

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending November 4, 1944

STOCKS

	High	Low	Last
A. P. W.	3⅝	3⅝	3⅝
Armstrong Cork Co.	45	44	44
Celotex Corp.	13½	13	13¼
Celotex Corp., pf.	18½	18⅛	18½
Certain-Teed Products Corp.	7¾	7¾	7¾
Certain-Teed Products Corp., pf.	130	120½	130
Champion Paper & Fibre Co.	29¾	29¼	29⅝
Champion Paper & Fibre Co., pf.	114	113¼	113¼
Congoleum Nairn Co.	25⅛	24½	24½
Container Corp. of America	28⅜	27	27½
Continental-Diamond Fibre Co.	11	10⅝	11
Crown-Zellerbach Co.	20¼	20	20
Crown-Zellerbach Co., pf.	104	102½	104
Dixie Cup Co.	18¼	18⅛	18⅛
Dixie Cup Co.,—A.	47½	47	47
Flintkote Co.	23	22⅛	22½
Flintkote Co., pf.	108¼	108	108¼
Robert Gair	4⅝	4⅜	4⅝
Robert Gair, pf.	16	16	16
International Paper Co.	20¼	19⅛	20⅛
International Paper Co., pf.	89½	88½	89
Johns-Manville Corp.	97	95¾	97
Johns-Manville Corp., pf.	...	...	...
Kimberly-Clark Corp.	37½	36	36⅝
MacAndrews & Forbes	29¼	29	29
MacAndrews & Forbes, pf.	...	...	...
Masonite Corp.	41⅜	40½	41
Mead Corp.	11¾	11¼	11¼
Mead Corp., pf. A—6%	...	...	...
Mead Corp., pf. B—5½%	90	89	90
National Container Corp.	11⅞	11½	11¾
Paraffine Companies, Inc.	...	...	...
Paraffine Companies, Inc., pf.	...	...	...
Rayonier, Inc.	15⅞	15½	15⅞
Rayonier, Inc., pf.	34¼	33¼	34¼
Ruberoid Co.	33½	32½	32½
Scott Paper Co.	45	43¾	45
Scott Paper Co., pf.	...	...	...
Sutherland Paper Co.	30	30	30
Union Bag & Paper Corp.	14⅜	13¼	14⅜
United Paperboard Co.	7	6⅞	6⅞
U. S. Gypsum Co.	77½	75	75⅝
U. S. Gypsum Co., pf.	180	180	180
West Virginia Pulp & Paper Co.	23⅝	23¼	23⅝
West Virginia Pulp & Paper Co., pf.	109	108	109

BONDS

Abitibi Pulp & Paper Co. 5s '53	88⅝	86⅞	88⅝
Celotex Corp. 3¾s '55	104	104	104
Certain-Teed Products Corp. 5½s '48	102¼	102	102¼
Champion Paper & Fibre Co. 4¾s '50	...	...	...
International Paper Co. 6s '55	108¼	108	108¼
International Paper Co. 5s '47	103⅜	103½	103½
Mead Corp. 3½s '53	...	...	...
West Virginia Pulp & Paper Co. 3s '54	...	...	...

New York Curb Exchange

High, Low and Last for Week Ending November 4, 1944

STOCKS

	High	Low	Last
Great Northern Paper Co.	36½	35¾	35¾
Hummel-Ross Fibre Corp.	7⅜	7⅛	7⅛
St. Regis Paper Co.	5⅝	5⅜	5⅜
St. Regis Paper Co., pf.	...	...	...
Taggart Corp.	...	...	...

BONDS

American Writing Paper Co. 6s '61	101½	101½	101½

Union Bag Nets 98 Cents

The Union Bag and Paper Corporation for the nine months, reports a net income of $1,251,547, or 98 cents a share, compared with $670,753, or 53 cents a share, last year; net sales, $28,452,382, compared with $24,021,335. September quarter net, $456,193, or 36 cents a share, against $406,464, or 32 cents a share, in 1943; sales, $10,028,806, compared with $8,538,491.

Continental Diamond Nets 56 Cents

The Continental Diamond Fibre Company for the nine months, reports a net profit of $255,112, or 56 cents a share, against $393,007, or 87 cents a share, last year.

Oxford Profits Lower

The Oxford Paper Company for the nine months, reports a net profit of $611,860 or 60 cents a common share, against $704,530 or 85 cents a share last year.

Obituary

William Nivison

William Nivison, 59, assistant mill manager for Hollingsworth & Whitney Company, and formerly of Gardiner, Me., died recently at the home of his friend, J. M. L. Bates, Gardiner, after an illness of several months.

Mr. Nivison was born in Guardbridge, Scotland, December 9, 1884, the fourth son and fifth child of Robert and Margaret Boe Nivison. Educated at Madras College, St. Andrews University, he was apprenticed to the paper-making trade as mechanical engineer at the Guardbridge Paper Mill, of which his father was superintendent.

In April, 1905, he went to Waterville, and since that time has been employed by the Hollingsworth & Whitney Company, four years at Waterville, 31 years in Gardiner, and four years at Mobile, Ala. October 5, 1921, he was married to Ruth Robinson, of Gardiner. Besides his wife, he is survived by two sons, David Shepherd and William, both in the armed service; four brothers, Robert and John of Waterville, David of New York City, and James of Kirkcaldy, Scotland, and a sister, Helen Thom of Derby, Conn.

He was a 32nd degree Mason and a member of the Episcopal Church. The funeral services were held in Christ Church, Gardiner.

William K. Austin

William K. Austin, 61, Neenah, Wis., former traffic manager of the Kimberly-Clark Corporation, Neenah, Wis., died Saturday evening, October 28, at his home at Neenah. He was appointed to that position in 1937, resigning in the fall of 1941 because of ill health.

Funeral services were conducted Tuesday morning, October 31, at St. Patrick's church by the Rev. Joseph J. Ahearn. Burial was in St. Patrick's cemetery.

Michigan Divisions to Meet

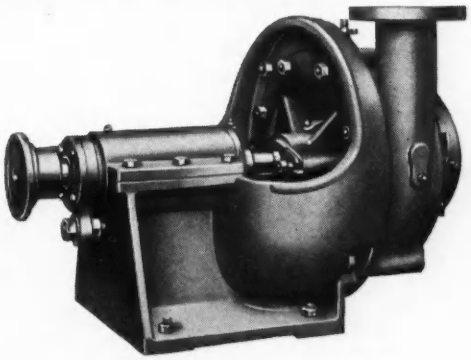
The next meeting of the Michigan Division of American Pulp and Paper Mill Superintendents Association will be held on Thursday, November 16 at the Park-American Hotel in Kalamazoo. Dinner will be served at 6:30 P.M.

Harold Sinclair, sales and technical engineer of American Cyanamid and Chemical Corporation of Kalamazoo Division, will speak on "Practical Application and Preparation of Melamine Resins in Wet Strength Papers."

Carl Bottenger, sales manager of the Plastics Division of the American Cyanamid Company, New York, will speak on "The Application of Amino Resins as an Adhesive in Conversion of Paper."

New England TAPPI To Meet

The TAPPI New England Section will meet at the Roger Smith Hotel, Holyoke, Mass. at 6:30 P.M. November 17, 1944. F. W. Schneider and Werner Kaufman will be in charge. Frank W. Egan of the John Waldron Company will talk on "Postwar Plans for Conventional and Paper Machine Coating" and George Thompson of B. F. Perkins & Son will discuss "Care and Maintenance of Calender Rolls."



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Many of these pumps are still giving satisfactory performance today after 30, 35 and even 40 years of service.

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Look to LOMBARD
When You Look to the Future
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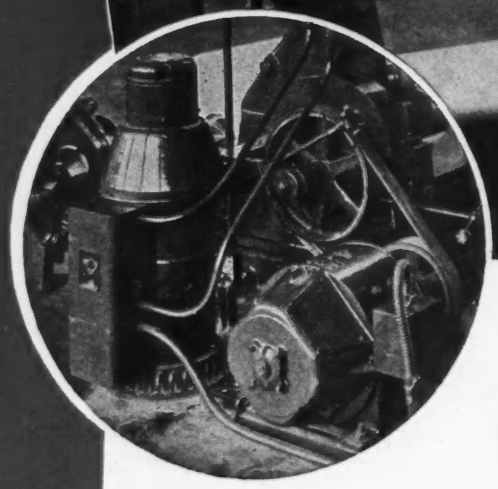
LOMBARD Governor CORPORATION
CENTRIFUGAL PUMPS

"MOTOR-DRIVE IS MORE THAN POWER"



This paper-slitting machine, powered and controlled by Reliance V★S Adjustable-speed Drive, slits cigarette paper into narrow ribbons which are later fed directly into cigarette-making machines.

S-M-O-O-T-H OPERATION IS VITAL—when You Slit Miles of Cigarette Paper

Slitting miles of cigarette paper is a delicate operation—and a "natural" for Reliance V★S Drive. Any sudden pull or erratic change of motion spells trouble. And in this or any other winding operation, Reliance V★S Drive provides the s-m-o-o-t-h starts, s-m-o-o-t-h acceleration and s-m-o-o-t-h adjustment to variable tension that are vital to successful results.

Speed control, reversing, braking, tandem operation, remote control and slow speeds for inching, threading and inspection are among the other operations which can be controlled electrically by the Reliance V★S Drive. The adaptability of this all-electric drive, operating from regular A-c. circuits, has been proved in numerous paper mills; its possibilities are almost limitless.

If you are looking for ways to speed production, cut costs or improve quality and uniformity, it's a good bet that a Reliance application engineer can help you.

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RELIANCE A-C D-C MOTORS

Ethyl Cellulose

Two technical booklets on ethyl cellulose, base of many plastics, flexible lacquers, quick-drying varnishes, inks, adhesives, fabric coatings and electrical insulation, have been published by Hercules Powder Company's Cellulose Products Department.

The forty-eight page booklet on "The Properties and Uses of Ethyl Cellulose" lists and describes the characteristics which have resulted in ethyl cellulose being accepted for so many industrial uses.

The booklet gives such properties as low flammability, freedom from discoloration by sunlight, toughness and flexibility even at very low temperatures, heat resistance, and usefulness in the formulation of plastics.

The booklet is divided into three parts. The first lists types and grades, general properties, and a blending chart. The second part deals with formulation, and the third part deals with specific applications of ethyl cellulose in various industries.

Twenty-two tables and eleven graphs illustrate and explain the effect of ethyl cellulose in various formulations.

The second booklet, entitled "Ethyl Cellulose Formulations with Resins and Plasticizers," was prepared for those interested in making practical use of ethyl cellulose.

To obtain the data in this book, a variety of forty-two resins representing various commercial types were examined. The book is intended to eliminate unnecessary research on the part of experienced formulators by providing a basis for formulation of ethyl cellulose lacquers, adhesives, plastics and hot-melt coatings.

Seven tables, showing the test results obtained on ethyl cellulose lacquers and mitrocellulose comparison formulas, are included in the section on application of data.

Pacemaker transmission belting is well-known . . . it has a string of performance records behind it "as long as your arm". It is the great all-purpose belt that has been building records for many years on all types of drives . . . in peace and war production. Even with war imposed changes in materials it has continued to give the dependable service that has won it a place of leadership.

Note bending of rubber. Separation of plies during operation is practically impossible.

When you buy Pacemaker you get . . .

1. Long service.
2. Practically no stretch or slippage.
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5. Exceptional flexibility.

On your next order for transmission belting specify *Pacemaker.*

CINCINNATI
RUBBER MANUFACTURING CO.
Cincinnati, Ohio

The Palletized Load

A new philosophy of simplified packaging which effects tremendous economies in shipping space and handling costs is discussed fully in Robert Gair Company's new illustrated 28-page booklet, "The Palletized Load" by J. D. Malcolmson, technical director of Robert Gair Company, Inc. It has been cleared through the U. S. Navy, whose experiences with palletizing provide valuable information for shippers.

The use of pallets is not new, but their full possibilities were not realized in practice until the Navy carried the idea to its logical conclusion. Faced with the necessity of transporting millions of various-sized items at a time when any delay or waste of shipping space might precipitate critical war emergencies, the Navy developed a simple, time-saving, labor-saving and space-saving formula for expediting the handling of the colossal volume of merchandise and supplies which passed through its depots in a never-ending stream.

The basic theory of the "palletized load" is to design shipping containers to fit a freight car instead of designing them to hold a certain amount of merchandise.

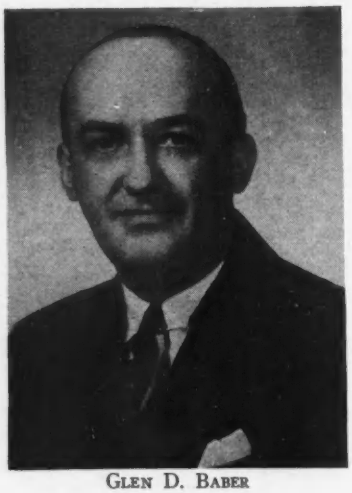
Manufacturers who ship in carload lots will find "The Palletized Load" interesting and profitable reading. It also contains technical data on standardized containers and an offer from the Technical Department of the Gair company to assist in applying its own wartime experience to the solving of shippers' post-war packaging and handling problems. The booklet is free upon request to Robert Gair Company, Inc., 155 East 44th street, New York 17, New York.

Harris-Seybold-Potter Acquire Stevens Co.

Harris-Seybold-Potter Company, Cleveland, manufacturers of graphic arts machinery, and the Charles N. Stevens Company, Chicago, dealers in bindery equipment, jointly announce the purchase of the Stevens Company by Harris-Seybold-Potter. R. V. Mitchell, president of Harris-Seybold-Potter Company, conducted the negotiations with Charles N. Stevens, founder and president of his company, and Mrs. N. C. Benson, its secretary-treasurer.

Charles N. Stevens, who is 75 years of age and has retired from active business, handled the sale of Seybold equipment in Middle Western states for 44 years. For 21 years, he was branch manager for Seybold, and since 1921 was head of his own company which has held the Seybold franchise. Since it was established in 1921, the Stevens Company has been located in the Rand-McNally Building Chicago.

The personnel of the Stevens Company will be retained by the Harris-Seybold management. The office staff will be under the direction of Mrs. Benson. The service organization and H. Peterson, mechanical superintendent who has been with Stevens for 35 years, will continue under the new management. The sales force, which is experienced and competent in meeting the needs of the market, will also remain with the new management.



GLEN D. BABER

Glen D. Baber, assistant sales manager of Seybold, will be transferred from the executive offices, in Cleveland, to Chicago to manage the Seybold operations. Mr. Baber has been with Seybold for over twenty years, and has had broad experience covering all phases of the company's sales and service operations. He has traveled extensively throughout the United States and Canada, and is thoroughly conversant with Seybold products and markets.

The Harris-Seybold-Potter Company, which is now converted to the manufacture of war goods, represents the consolidation of leading graphic arts machinery companies merged by R. V. Mitchell, company president, in 1927. The Harris Division builds lithographic and rotary printing presses. The Seybold Division manufacturers Seybold cutters, Morrison stitchers and Wright drills. Both Harris and Seybold have been responsible for major developments of outstanding importance in their fields of press manufacture, paper cutting and bindery equipment.

The purchase of the Stevens Company is the third Harris-Seybold-Potter Company move within recent weeks in the furtherance of the plans of the company for postwar operations in this country and in export. Recently announced was the integration of the sales organizations of the Harris and Seybold Divisions under H. A. Porter, vice president in charge of sales. With this program, J. C. Dabney, sales manager of the Seybold Division, was appointed assistant manager of sales.

The establishment of the company's Used Machinery Division in Chicago was a previous move in the expansion program. This division is under the management of Ren R. Perry, who has been connected with Harris for many years. It provides facilities for the reconditioning and sale of used graphic arts machinery.

All Chicago operations of Harris-Seybold-Potter are under the management of William Guy Martin, vice president in charge of the Western District with offices in the Fisher Building.

OPERATES SO QUIETLY

The unusually quiet operation of Reading Electric Hoists is due to the use of worm gear speed reduction. Quiet operation also means less wear of moving parts and therefore a minimum of maintenance. Low cost maintenance also results because there are only three moving parts of the hoisting mechanism proper. High precision anti-friction bearings are another factor in the smooth, quiet operation of Reading Electric Hoists. It will pay you to investigate the money saving features of Reading Electric Hoists. For full technical information, write for Bulletin 1004.

READING CHAIN & BLOCK CORPORATION
2113 ADAMS ST., READING, PA.

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READING HOISTS

U. S. Paper Awards

WASHINGTON, November 8, 1944 —The Manistique Pulp and Paper Company has been awarded a contract for furnishing the Government Printing Office with 122,000 pounds of white newsprint paper at $59. Other paper awards made for paper bought on the open market include the following:

Manistique Pulp and Paper Company, has also been awarded contract for furnishing 9,000 pounds of white newsprint paper at $58, and the Franklin Research Company will furnish 15,962 pounds of white 50 percent chart nautical paper at 19.025 cents. The Michigan Paper Company will furnish 106,000 pounds of white CW writing paper at 7.27 cents and the Riverside Paper Corporation, will furnish 84,000 pounds of same at 7.27 cents.

The latter corporation will also furnish 50,000 pounds of the same at the same price and the Mead Sales Company, Inc. will furnish 150,000 of white MC book paper at 7.13 cents.

Eastern Corporation will furnish 51,750 pounds of No. 1 white sulphite ledger paper at 9.6 cents and the same firm will furnish 46,800 pounds of the same at the same price. The Maine Seaboard Paper Co. Inc. will furnish 402,000 of newsprint paper at $58.50 per ton and 198,000 pounds of the same at the same price.

Bermingham Prosser Company, will furnish 150,000 pounds of Western CW writing paper at 7.31 and the Watervliet Paper Company will furnish 20,010 of white offset enamel paper at 9.31 cents. The Collins Manufacturing Company will furnish 100,000 of pink 50 percent rag bond paper at 21.54 cents and Mead Sales Company will furnish 276,000 pounds of white paper at 7.13 cents.

The Stanford Paper Company will furnish 100,000 of white writing paper at 7.29 cents and the same firm will furnish 150,000 pounds of the same at the same price. The Butler Paper Company will furnish 100,000 pounds of white writing paper at 7.25 cents and the same firm will also furnish 100,000 pounds of white book paper at 7.56 cents. The McLauren-Jones Co. will furnish 16,478 pounds of white coated paper at 14 cents and the Parker-Young Company will furnish 50,000 of canary bond at 12.33 cents.

The Mead Sales Company will furnish 150,000 pounds of white writing paper at 7.86 cents and the same firm will furnish 24,000 pounds of the same at the same price. Mead Sales will also furnish 50,000 pounds of white writing paper at 6.74 cents and the French Paper Company will furnish 22,000 pounds of white writing paper at 8.10 cents. The same firm will also furnish 18,000 pounds of the same at the same price and Eastern Corporation will furnish 100,000 of white book paper at 8.14 cents.

Barton Duer Koch Paper Company will furnish 1,600 pounds of golden-rod book paper at 13.9 cents and the Eastern Corp. will furnish 69,750 of white bond paper at 9.31 cents. Mathers-Lamm Company will furnish 40,000 sheets of red glazed paper at 9.80 per M. sheets and the Consolidated Water Power and Paper Company will furnish 268,000 pounds of white MC paper at 6.07 cents.

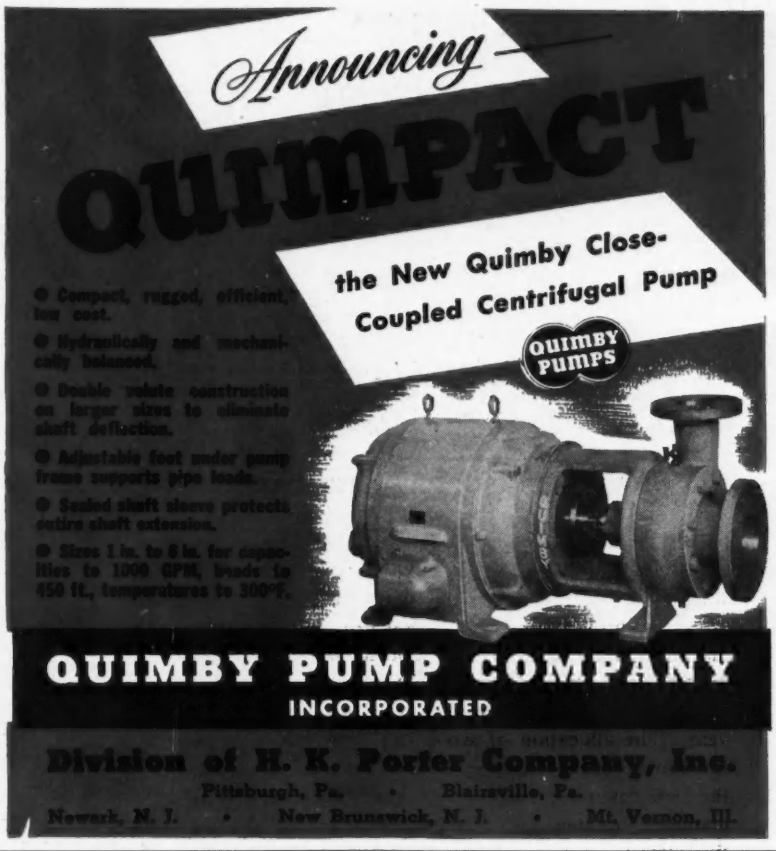
The International Paper Company will furnish 289,695 pounds of white index paper at 6.17 cents and the R. P. Andrews Paper Company will furnish 40,000 pounds of bookend paper at 7.17 cents. Eastern Corporation will furnish 40,000 pounds of white bond paper at 11.48 cents and the same firm will also furnish 40,000 pounds of the same at the same price.

The Cauthorne Paper Company will furnish 200,000 pounds of white writing paper at 7.87 cents and the Stanford Paper Company will furnish 24,000 pounds of blotting paper at 10.38 cents. Whitaker Paper Company will furnish 24,000 pounds of blotting paper at 9.7 cents and Bulkley, Dunton & Co., will furnish 66,000 pounds of white writing paper at 5.5 cents. Central Ohio Paper Company will furnish 106,000 pounds of white book paper at 8.15 cents and the same firm will also furnish 44,000 pounds of the same at the same price.

Franklin Research Co. will furnish 51,300 pounds of buff chart paper at 19.325 cents and James White Paper Company will furnish 34,000 pounds of white offset paper at 7.66 cents. The same firm will also furnish 12,000 pounds of the same at 7.66 cents; 50,000 pounds of the same at 7.56 cents; 10,000 pounds of same at 8.23 cents.

Watervliet Paper Company will furnish 70,000 pounds of white offset paper at 7.57 cents and 34,000 pounds of same at 7.66 cents. Barton Duer & Koch Paper Company will furnish 202,808 pounds of buff bristol at 6.79 cents and Parker-Young Company will furnish 46,000 of blue bond paper at 10 cents and 42,000 of white bond paper at 9.25 cents.

Barton Duer & Koch Paper Company will furnish 5,850 pounds of white bond paper at 24 cents and 100,000 pounds of buff bristol at 6.40 cents. The Stanford Paper Company will furnish 23,688 pounds of white text paper at 16.08 cents and the Stanford Paper Company will furnish 456,000 pounds of white writing paper at 7.62 cents and 48,640 pounds of same at the same price.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QUIMPACT
the New Quimby Close-Coupled Centrifugal Pump
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Division of H. K. Porter Company, Inc.
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PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
Henry J. Berger, Editor

COMING EVENTS IN PAPER INDUSTRY

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

Chicago Professional Paper Group—Third Monday of each month except July and August at Chicago Bar Association, Chicago, Ill.

NEWSPRINT SUPPLY CRITICAL

The newprint supply situation continues critical. Late Government reports indicate no expectancy of improvement during the remainder of this year. The unfavorable situation is reflected in the new supply and consumption tonnages. Total new supplies available for United States production in the current final quarter were scheduled at 819,000 tons, which is about the same as available in the other quarters of this year. The allocation of wood pulp for newsprint in the fourth quarter aggregates 180,000 tons. Canada, the Department of Commerce reports, has promised to maintain shipments at 200,000 tons monthly during the current quarter and Newfoundland mills are expected to supply 13,000 tons monthly.

All-over governmental orders and total civilian consumers are estimated at about 860,000 tons for the current quarter. Consumption during this period is expected to be approximately 41,000 tons in excess of new supplies, which must be supplied by inventories. Publishers will be permitted to consume their full fourth quarter quotas under Limitation Order L-240, the Department of Commerce states, drawing upon their inventories to meet any deficit between receipts and consumption. Amendments to Limitation Order L-240, which established delivery quotas on the average of the last five months of the year, have made possible an accumulation of stocks to meet the heavy demands during the final quarter.

Conservation of newsprint for the remainder of this year is aided by an amendment to Limitation Order L-240, announced September 5, which reduced the consumption quotas of 30-pound newsprint for newspapers by 6⅔% of the tonnage of all such papers ordered after July 1, 1944. This amendment also eliminates the advantage in printing surface enjoyed by users of 30-pound paper. Other amendments, the Department reports, peg the consumption of paper by special types of newspapers and by small newspapers, effective as of October 1, 1944. Direction 4 to Limitation Order L-240, issued September 23, requires that print paper consumed in publishing servicemen's special editions which are prepared by a newspaper publisher or identified with a newspaper, must be charged against that newspaper's consumption quota. There is no indication now, the Department report states, that the shortage in newsprint, or in other classes of paper, will ease with the cessation of hostilities in Europe. Essential military and civilian paper requirements in the liberated countries will be added to present requirements.

In reference to imported newsprint the Department points out that Canada can supply no more newsprint until the raw materials situation eases, either through a reduction in demand from other consumers of wood pulp or through a greater supply of pulpwood becoming available. Neither of these conditions appears likely to materialize in the next few months. Restrictions on the use of electric power by paper mills in Ontario and Quebec were lifted by the Munitions Ministry, effective October 1, but, while this order will permit full operations by these mills, it will not affect the situation much during the next few months. Military demands for packaging materials, which are a heavy drain on pulp supplies, appear likely to continue with the shift of men and materials to the Asiatic theater.

Pulpwood supplies, which have been increasing in the United States and increased 24.6% during the first eight months of 1944 over 1943, is contrasted with a decline of 5.6% in imported pulpwood for that period. Pulpwood supplies in Canada, the Department reports, are not expected to increase until the 1944-45 cut becomes available, which will not be until the spring of 1945, and will not appear in newsprint production before next summer. Not much newsprint, nor wood pulp for the manufacture of newsprint, is expected from Sweden. As Norway is still occupied by enemy forces, nothing can be expected from that country.

A comparison of the newsprint supply situation for the first eight months of 1944 with the like period in 1943, shows no favorable factors. United States production decreased 14.2%; imports decreased 13.4%, exports decreased 11.3%; indicating a decrease in total supply, computed in round figures, of 9.3%. Mill inventories declined 50.3% and publishers' inventories declined 9.2%; the decrease in stocks being 47,000 tons. The Department's figures of the apparent total consumption for the eight month period shows a decrease of 16.2% this year over last year. North American newsprint production as reported by the Department of Commerce for the first eight months of 1944 was 2,636,000 tons, compared with 2,658,000 tons in 1943, and with 2,986,000 tons in 1942.

A report released by the War Production Board following the two-day meeting of the Newspaper Publishers Industry Advisory Committee late last month, stated that production for U. S. consumption of approximately 1,300,000 additional tons of all the various types of printing papers would be required

to raise paper supply levels to those of the base periods designated in WPB orders. The 1,300,000 ton figure represents the approximate annual reduction required by WPB limitation orders governing paper. U. S. production of newsprint in 1941 totaled 1,014,912 tons, as compared with the current annual rate of 720,000 tons. Canadian shipments to the United States were 2,770,002 tons in 1941, as compared with the current annual rate of 2,400,000 tons; Newfoundland shipments to this country were 217,233 tons in 1941, as compared with 112,000 tons based on current 1944 shipments.

In reviewing the present paper situation, WPB officials pointed out that while newsprint consumers' inventories are now higher than they were at the end of 1943, pulpwood inventories are very low in some areas. They said that inventories of waste paper also are low, despite current collections approximating 620,000 tons monthly. Officials of the WPB assured committee members that M-93 would be last paper order to be revoked. This statement, the report goes on to explain, was made to reassure newspaper publishers and other paper and paper board users, that even if orders limiting the specific uses of paper and paper products were lifted, control would be retained over the basic pulp allocation order; that it would be needed to insure required production of essential papers.

Portuguese Edition of "Wood Pulp"

A Portuguese edition of the booklet "Wood Pulp, A Basic American Industry," recently issued by the United States Pulp Producers Association, is being prepared for publication in Brazil, it was announced today by Oliver M. Porter, executive director of U.S.P.P.A.

O Papel, a leading South-American pulp and paper magazine, is planning to publish this Portuguese edition of "Wood Pulp" early in 1945. It will be illustrated with the same pictures, charts and diagrams used in the original. Arrangements for the publication of this Portuguese edition have been handled by the Bulkley, Dunton organization of 295 Madison avenue, New York City.

"Brazil is by far the largest South-American user of United States pulps, and the rapidly progressing industrialization of that country results in continuously increasing demands for wood pulp and pulp products. At present, shortages make it impossible to satisfy all of these demands, but when normal conditions return, we should have an important market for our pulp and paper in Brazil," Mr. Porter said.

"United States wood pulp and paper exports to South America have assumed added significance during the war, as a part of the 'Good Neighbor' policy. A great many users of pulp and paper in Latin America have now had an opportunity to become familiar with the fine quality of United States products. The postwar continuance of United States pulp and paper exports to our Southern neighbors, on a considerable scale, should be facilitated by making copies of our booklet on the United States Pulp industry available to Brazilian readers."

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1944		Corresponding Weeks—1943	
Sept. 23	93.7	Sept. 25	92.2
Sept. 30	95.2	Oct. 2	91.7
Oct. 7	94.8	Oct. 9	90.9
Oct. 14	94.7	Oct. 16	90.2
Oct. 21	91.6	Oct. 23	88.8
Oct. 28	92.7	Oct. 30	88.5

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1943	87.2	88.9	89.5	88.7	91.4	84.8	84.3	91.0	88.3	89.6	89.6	82.0	87.8
1944	89.6	89.6	89.2	88.8	89.7	90.7	81.1	92.5	90.1	*93.6*			

COMPARATIVE YEARLY SUMMARIES

	1937	1938	1939	1940	1941	1942	1943	1944
Year to Date	84.7	70.7	81.3	86.1	96.2	92.0	88.5	90.0
Year Average	79.8	71.5	83.4	85.6	97.4	90.4	87.8	

*Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1938	56	63	63	60	60	59	59	69	70	73	67	61	64
1939	65	73	76	74	69	73	68	77	82	91	88	77	77
1940	78	75	74	76	82	85	77	79	78	85	83	77	78
1941	81	88	89	89	91	94	92	98	95	99	98	90	92
1942	102	101	101	95	82	72	68	75	76	81	82	77	84
1943	86	88	94	94	96	94	89	96	94	94	93	87	93
1944	90	96	95	96	96	96	85	96	92	95			

Week ending Sept. 23, 1944—96 Week ending Oct. 14, 1944—96
Week ending Sept. 30, 1944—95 Week ending Oct. 21, 1944—94
Week ending Oct. 7, 1944—96 Week ending Oct. 28, 1944—95

†Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

Frank A. Augsbury Honored

OGDENSBURG, N. Y., November 6, 1944—Two hundred friends and fellow citizens of Frank A. Augsbury from Ogdensburg and various points on both sides of the border joined in paying tribute to him at a Chamber of Commerce sponsored testimonial dinner in the Elks Club on Monday evening of last week.

Mr. Augsbury himself added a note of high significance by announcing that he had sold the famous Algonquin paper mill in Ogdensburg to the Diamond Match Company interests of New York represented by Borst, Forster and Dixfield, who operate a paper mill at Plattsburgh.

The white-thatched industrial leader, whose mental and physical vigor belies his nearly 80 years, caused a wave of applause to sweep through the gathering when he tersely stated that the new owners expected to expand the paper mill's activities and that the weekly payroll would be about the same as at Plattsburgh, where it is $25,000 a week.

S. Walter, Inc. Announces New Policy

S. Walter, Inc., Philadelphia, Pa. paper distributor, with branches in Allentown and York, Pa., has adopted a new merchandising policy in the paper distribution field.

Each branch of the Walter organization will have a "sales developer" who will work along with the selling organization in the introduction of new products as well as merchandising methods. The divisions will work as separate entities, specializing in those papers and paper products which are most valuable in each particular area.

With an eye to the future, President Walter is readying positions for those of his men in the service upon their return. This organization, Mr. Walter says, is already making advance sales plans and is constantly interested in expanding representation and taking on new lines.

Diamond
Research Chemists and Development Engineers cooperate in the perfection of Diamond Products to meet industry's ever-changing requirements.
Through close teamwork of our field and development engineers, research chemists and manufacturing personnel, DIAMOND coordinates a variety of specialized technical skills in perfecting the service rendered to users of Diamond Products.
Thus any change in your requirements can be quickly and accurately provided through the close cooperation of the Diamond personnel and facilities.
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DIAMOND ALKALI COMPANY
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Section of the
TECHNICAL ASSOCIATION
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Substitutes for Round Pine Wood in Making Alkaline Pulps*

By Edward H. Hill[1]

Abstract

Laboratory investigations were made by cooking sawmill sawdust of different ages, chip screen rejects, sawmill slabs, shavings, etc., for the purpose of evaluating these materials as substitutes for round logs. Tables showing comparisons of the weights of the different substitutes for round logs, pulp yields, cooking conditions, cost of raw materials, etc., are listed.

The biggest criticism of the pine slabs, chip screen rejects, and sawmill sawdust was the dirt content of the pulp produced, the low strength characteristics. and the amount of sand added into the cooking system from these materials.

The quality of the pulp, damage to the equipment, and the actual need for raw materials of this kind should be considered by each individual mill before substituting these for round logs.

During the past year it has been necessary in some mills to curtail production or close for a part of the week because of a wood shortage. Practically every mill in the South has been affected in some way by this problem. To combat this, some mills have turned to prison help, women workers, etc., for handling wood, while others are using sawmill slabs, sawdust, different species of wood, and other raw material that might be used for making pulp. Just how far a mill could go in any of these directions depends on its location, the kind of equipment, and the type of pulp and paper being manufactured. Laboratory and mill investigations were made to determine the cost and advisability of using different wood materials available in the locality.

The object of this paper is to present some of the outstanding data accumulated from the study made in an attempt to run the Plymouth mill full time. It is realized that the data presented here may not duplicate results found by other investigators since there are many factors to be considered in comparing experimental data. It is believed, however, that the data present will check results from investigations made under similar conditions.

Procedure

The cooking and strength characteristics of five substitutes for round pine logs are reported along with data from cooking regular pine wood. These substitutes are listed below:

1. New Jersey scrub pine
2. Pine slabs
3. Chip screen rejects
4. Sawmill sawdust
5. Navy yard shavings
6. Regular mill pine logs

The cooks were made in a small experimental digester with a capacity of about 30 pounds of moisture-free chips. This digester is equipped with a circulating pump and can be used for cooking either with direct or indirect steam. It is equipped with a blow tank and circulating and blow lines in proportion to the size of the mill cooking equipment. In charging the digester, the material was added, then the white and black liquor. The circulating pump was used on the first sawdust cooks but it was found that the circulating line would become plugged with the sawdust. After several attempts to cook with the circulating system in operation, the remainder of the cooks were made without using the circulating system. No sawdust cooks in which the circulating line was used are reported.

The permanganate numbers were made by the TAPPI Standard T 214 m-37 method. The only variation was that a clothes wringer was used to press a small disk of wet pulp to a certain consistency so that the right amount of wet pulp could be weighed for 1 gram of moisture-free pulp.

The beatings were made in a Valley beater under the conditions specified in the TAPPI Standard T 201 m-37. The finishing and testing of the sheets were made by TAPPI Standard T 205 m-40 using the standard British sheet mold. The hand sheets were conditioned at 65% relative humidity and 70° F. for 24 hours. The bursting strength results presented in this report are obtained by dividing the average bursting strength tests by the basis weight and multiplying the answer by ten. The tear is obtained by dividing the total gram tear from sixteen sheets by the basis weight and multiplying the result by 100. The freeness tests were made on a Williams Precision Tester using 3 grams of moisture-free pulp.

The white and black liquor used in all the cooks was the regular mill liquor. The white liquor usually has a test around 0.12 pounds per gallon sodium carbonate, 0.26 pounds per gallon sodium sulphide, and 0.69 pounds per gallon sodium hydroxide. All

[1] Member TAPPI; Technical Director, North Carolina Pulp Co., Plymouth, N. C.

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 14-17, 1944.

TABLE. 1.

Kind of Material	Regular Pine Logs	New Jersey Scrub Pine	Pine Slabs	Chip Screen Rejects	Sawmill Sawdust	Navy Yard Shavings
Weight/160 cu. ft., unpeeled	6292	4800	4730	....	....	...
Weight/160 cu. ft., peeled	6012	3770	3920	....	....	...
Moisture in peeled material, %	51.3	43.1	48.7	49.0	53.4	13.8
Wet. wt. of chipped material.	5905	3708	3830	3246	3585	890
Moisture-free wt. of chipped material.	2875	2109	1964	1652	1670	787
Loss in wt. from peeling, %	4.4	21.4	17.1	....	....	...
Loss in measurement from peeling, %.	13.7	21.4	23.3	....	....	...
Loss in chipping, %	1.78	1.64	2.28	....	....	...
Wet wt. material loss in chipping.	107	62	90	....	....	...

Note: All weights are in pounds and for 160 cu. ft. units.

chemical figures given in this report are expressed in terms of sodium oxide.

Chip Classification

The logs used for comparison were taken from the mill supply of pine. Enough logs were chipped under mill conditions for the experimental cooks. Slabs and New Jersey round wood were chipped under the same conditions. To obtain the weight per 160 cubic foot unit, a one unit rack was used for the wood and truck loads of the other materials were measured and weighed as received at the mill. The mechanical separation of the different sizes of the cooked materials were made by following the procedure set up by the Williams Apparatus Co. Tables I and II show the weight and chip classification for the different materials.

Sawdust

There were several large piles of sawdust of different ages available. To determine if the age of the material affected the yield and strength characteristics, cooks were made from material that was new, 3, and 12 years old. Table III gives the cooking conditions and strength characteristics of the pulp produced from the different age sawdust samples:

Yield and Strength

The cooks which gave the best results from the standpoint of yields and strength characteristics for the different materials are listed in table IV.

Operational Difficulties

After the experimental cooks, given in the preceding tables, were completed, the cooking of chip screen rejects were begun in the mill. The first trouble from the cooking of this material was in charging the digesters and getting them to blow clean. Also it was not possible to get as much liquor in the digester when sawdust was being cooked as when cooking chips. Different methods of charging the digester were tried and it was found that if about 2000 gallons of liquor, that is, about 20% of the total volume, were first added to the digester before the chips were turned into it, this would eliminate packing, which no doubt, had accounted for the trouble in blowing the digester. After 2000 gallons of liquor had been added, the sawdust was run into the digester until it was full. The sawdust was then cut off and the rest of the cooking liquor added.

Several days after starting to cook sawdust, small particles of sand were found in the bleached pulp. At Plymouth, two types of pulp are produced: (1) a well cooked pulp which is used for bleaching purposes and (2) one that is cooked much harder which is used for box board, etc. Sawdust was being cooked on the box board pulp side and laboratory tests showed that there was considerable sand in both the chip screen rejects and the sawmill sawdust. In the black liquor washing system, the same storage tanks are used for the washers on the soft pulp side as on the hard pulp side. By investigation it was found that sand was getting into the bleached pulp through the washing system from the chip screen rejects and sawdust. This trouble was eliminated by building baffles over the pump intakes for the washers from the black liquor storage tanks.

TABLE II.

Kind of Material	Regular Pine Logs	New Jersey Scrub Pine	Pine Slabs	Chip Screen Rejects	Sawmill Sawdust	Navy Yard Shavings
Chips larger than 1 in., %..	6.4	2.4	3.5	...	...	
Chips larger than ½ in, %.	84.0	82.4	87.2	1.7	1.9	18.4
Chips larger than ¼ in, %.	6.5	11.2	6.4	5.1	3.7	55.2
Chips less than ¼ in., %...	2.8	3.2	2.7	84.8	70.0	19.6
Chips through 16-mesh, %..	0.3	0.4	0.2	8.4	24.0	6.8
1.0% Caustic solubility ...	17.8	14.6	20.6	18.8	17.7	17.0

Since cooking chip screen rejects and sawdust for several months, there appears to be a considerable decrease in the life of evaporator tubes. This trouble might be due to erosion caused by the large amount of sand introduced into the recovery system from use of the chip screen rejects and sawdust.

At the present time investigations are being made of the screening of the chip screen rejects and sawmill sawdust through a fine mesh screen in the mill as a means of eliminating most of the sand. So far these tests have shown that by discharging 10% of these materials, the sand content will be decreased from 80 to 90%.

No attempt will be made to evaluate the hidden cost such as the wear on the evaporator tubes, pumps, machine wires, etc., which result from using these substitutes. It is certain that there are hidden costs of these kinds, but on the other hand these might be balanced by the saving on the cost of the raw materials. For a comparison there is listed in table V the cost of the different materials per unit of 160 cubic foot and the cost of the wood materials required for a ton of air dry pulp.

Summary

No attempt will be made to draw any conclusions

TABLE III.

Source of Material	Pulp Mill	Saw Mill	Saw Mill	Saw Mill
Age of material, yrs.	New	New	3	12
Moisture in material, %	49.0	53.4	63.0	67.5
Active alkali on moisture-free material, %	20	20	18	18
Causticity of liquor, %	85.2	84.4	83.8	85.6
Sulphidity of liquor, %	24.0	25.8	24.6	24.2
Gallons liquid/100 lbs. moisture-free material	30	28	28	28
Cooking time, hr.	3.0	3.5	3.0	3.0
Temperature (max.), °F.	340	340	340	340
Pressure, lbs./sq. in	115	115	115	115
Hours to temperature	1.5	1.5	1.5	1.5
Air dry yield on moisture-free material, %	45.2	45.0	43.8	38.0
Permanganate no.	27.0	25.4	26.6	24.7
Slowness				
Minutes beaten 5	8.4	11.2	10.2	32.0
Minutes beaten 25	15	23	36	153
Minutes beaten 45	39	93	108	416
Minutes beaten 65	140	279	348	793
Bursting Strength				
Minutes beaten 5	72	55	31	39
Minutes beaten 25	102	76	68	62
Minutes beaten 45	116	99	86	74
Minutes beaten 65	123	80	92	90
Tear				
Minutes beaten 5	260	173	145	119
Minutes beaten 25	272	152	137	86
Minutes beaten 45	211	143	118	78
Minutes beaten 65	153	128	102	68
Bursting strength value	218	175	154	136
Tear value	483	295	255	164
Pulp value	701	470	409	300

from the foregoing data. As has been pointed out, the feasibility of using materials other than round wood must be worked out by each individual mill. It is believed, however, that the following points should be brought out and are justifiable as based on tests made under the conditions employed in this report.

1. Pine slabs showed 911 pounds less moisture-free weight per unit of 160 cubic feet than the regular pine logs. The chip screen rejects and sawmill sawdust showed 1223 pounds and 1205 pounds less moisture-free weight per unit of 160 cubic feet.
2. The pine slab wood showed higher caustic solubility tests than the pine logs, the chip screen rejects, or the sawmill sawdust.
3. In cooking sawmill sawdust of different ages, it was found that the per cent air dry yield based on moisture-free sawdust dropped in proportion to the age of the sawdust.
4. The per cent air dry yield on moisture-free material charged into the digester was 51.2% for the regular mill logs, 48.6% for the pine slabs, 45.2% for the chip screen rejects, and 45.0% for the sawmill sawdust.
5. The yield of air dry pulp per 160 cubic foot unit was 1492 pounds for the regular mill logs, 1069 pounds for the New Jersey scrub pine, 950 pounds for the unpeeled pine slabs, 747 pounds for the chip screen rejects, 731 pounds for the sawmill sawdust, and 356 pounds for the Navy yard shavings.
6. In general the strength characteristics of the pulp made from the New Jersey scrub pine were about the same as those of the pulp made from the regular pine wood, that made from slabs was about 8% lower, that made from chip screen rejects was about 14% lower, that made from sawmill sawdust was about 40% lower, and that made from Navy yard shavings was about 17% lower.

TABLE IV.

Kind of Material	Regular Mill Logs	New Jersey Scrub Pine	Unpeeled Pine Slabs	Chip Screen Rejects	Sawmill Sawdust	Navy Yard Shavings
Moisture in wood, %	51.3	43.1	43.6	49.0	53.4	13.8
Active alkali on moisture-free material, %	20.0	16	18	20	20	18
Causticity of liquor, %	86.5	88.4	82.4	84.4	83.4	84.1
Sulphidity of liquor, %	26.0	23.1	24.7	25.8	24.4	27.4
Gallons liquid/100 lbs. moisture-free material	43	43	40	30	28	43
Cooking time, hr.	2.33	3	2.33	3	3.5	3
Temperature (max.) °F.	348	350	348	341	340	349
Pressure, lbs./sq. in.	115	115	115	115	115	115
Hours to temperature	1.5	1.5	1.5	1.5	1.5	1.5
Air dry yields on moisture-free material, %	51.2	50.7	48.6	45.2	45.0	45.4
Permanganate no.	29.6	32.9	29.2	27.0	25.4	33.4
Air dry pulp/160 cu. ft. unit, lbs.	1492	1069	950	747	731	356
Slowness						
Minutes beaten 0	6.0	..	..	..	..	..
Minutes beaten 5	6.4	6.7	7.2	8.4	11.2	10.0
Minutes beaten 25	11.4	13.0	24.0	18.0	23.0	27.0
Minutes beaten 45	32.0	20.0	47.0	39.0	93.0	58.0
Minutes beaten 65	98.0	59.0	94.0	140.0	279.0	123.0
Bursting Strength						
Minutes beaten 5	70	77	80	72	75	57
Minutes beaten 25	120	127	126	102	97	89
Minutes beaten 45	148	156	140	116	104	102
Minutes beaten 65	161	173	151	123	105	121
Minutes beaten 75	156	177	150	132	100	133
Tear						
Minutes beaten 5	279	303	275	260	173	273
Minutes beaten 25	275	282	257	272	152	243
Minutes beaten 45	268	243	226	211	143	230
Minutes beaten 65	224	217	187	163	128	215
Minutes beaten 75	218	207	170	132	113	200
Bursting strength value	268	283	266	218	201	191
Tear value	543	525	483	483	295	473
Pulp value	811	808	749	701	496	664

TABLE V.

Kind of Material	Regular Mill Pine Logs	New Jersey Scrub Pine Logs	Pine Slabs	Chip Screen Rejects	Sawmill Sawdust	Navy Yard Shavings
Weight of moisture-free material/160 cu. ft. unit	2875	2109	1964	1652	1670	785
Approximate cost/160 cu. ft., dollars	13.00	15.00	10.00	1.75	3.75	3.19
Number units needed/ ton of product	1.35	1.87	2.09	2.68	2.73	5.61
Cost of material/ton of product, dollars.	17.55	28.05	20.90	4.69	10.24	17.89
Number lbs. sand added/ton of product	.05	...	1.8	10.5	4.5	.08
Number lbs. sand added to system/ 400 tons	20	...	720	4200	1800	32

7. The cost of enough wood to produce a ton of pulp from the different materials investigated was $17.55 for the regular pine logs, $28.05 for the New Jersey scrub pine, $20.90 for the pine slabs, $4.69 for the chip screen rejects, $10.24 for the sawmill sawdust, and $17.89 for the Navy yard shavings.
8. Based on a capacity of 400 tons of pulp per day, there would be added in the mill system without any washing, 1720 pounds of sand from the use of pine slabs, 4200 pounds from the use of chip screen rejects, 1800 pounds from sawmill sawdust, and 32 pounds from Navy yard shavings.
9. In general, there is a large saving from using chip screen rejects or sawmill sawdust in place of regular pine logs. However, the hidden cost, and inferior quality pulps should be considered before definitely deciding to use this type of raw material. It is believed that with proper screening facilities, the chip screen rejects that are ordinarily thrown away can be used at a considerable saving to replace a part of the pine logs necessary in making a ton of pulp. It is recommended that all mills thoroughly investigate their raw material possibilities before definitely deciding to use any of the substitutes that have been studied for this report.

TAPPI Notes

Joseph T. Loomer, formerly of the West Virginia Pulp and Paper Company is now a research and development engineer for Robert Gair Co., Thames River Div., New London, Conn.

Jack Apter, recently of the N. Y. State Coll. of Forestry is now a research chemist for the Schweitzer Paper Company, Spotswood, N. J.

Samuel B. Jones, papermill engineer for the West Virginia Pulp and Paper Company, Piedmont, W. Va., has retired and now lives at 652 Cane Run, Harrodsburg, Ky.

P. F. Neumann, service engineer for the P.M.C. Dept. of the Hercules Powder Company, has been transferred from Kalamazoo, Mich. to Wilmington, Del.

M. L. Edwards, plant engineer, Pulp Div., Weyerhaeuser Timber Company, Longview, Wash., is on leave of absence for the duration as consultant to the Thompson Products Company, Cleveland, Ohio (Aircraft accessories).

Herman N. Simpson, formerly manager of the Northwest Filter Company is now a consulting engineer at 1916 - 29th Ave. West, Seattle 99, Wash.

John A. MacArthur, formerly engineer for the International Paper Company is now engineer for the Sherbrooke Machineries, Ltd., Sherbrooke, P. Q.

The Injection Alkaline Pulping of Cottonwood With Conductometric Control*

By Sidney D. Wells[1], George E. Martin[2] and D. R. Moltzau[3]

Abstract

The conductivity of a soda cooking liquor was measured throughout the course of a cook and employed as a reliable index of the liquor composition.

By controlled injection of fresh chemical in such a way as to maintain a certain selected range of conductivity values, the active chemical present in a soda cooking liquor was kept practically constant.

Injection cooking with preliminary impregnation affords an appreciable saving in white liquor requirements.

An injection cook with conductometric control gave a lighter colored, easier hydrating pulp, which was 7% higher in bursting strength and 15% higher in tearing strength, than a standard pulp with the same permanganate number.

It has been observed by a number of investigators *(3-5, 7, 8, 23)* that superior pulps are produced when only part of the cooking chemical is introduced into the digester at the beginning of the cook. Several workers have obtained good results by starting with a small amount of chemicals in the digester and injecting a concentrated solution of the chemicals into the circulating line during the cook.

Perhaps the main reason for the lack of commercial application of injection cooking to date has been the difficulty connected with its control. If an injection schedule laid out in advance is to be followed, the amount of chips in the digester, their moisture content, and the concentration of the injecting liquor must be carefully controlled. Small variations in these factors may result in large variations in the resulting pulps.

In cooks made by the soda process, the sodium hydroxide in the liquor reacts with certain acidic compounds in the wood to produce sodium salts of organic acids. The mobility of the hydroxyl ion is very large compared with that of the organic radicals which replace it in the liquor as cooking progresses. Thus, the conductivity of the liquor decreases. It would thus seem possible that the conductivity of the liquor could be utilized as a means of controlling the rate of injection of concentrated white liquor in an injection cook. However, the large variation of conductivity with temperature must be considered. This method of control would be independent of the usual commercial variations in the digester charge and the concentration of the liquor.

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Historical Review

Injection Cooking

From a study of the chemical changes taking place in the cooking of jack pine and aspen by the soda process, Bray and Andrews *(1)* concluded in 1923 that the cooking process was practically complete after 1 hour at maximum pressure. Wells, Grabow, Staidl, and Bray *(2)* confirmed this conclusion for soda cooks on aspen, loblolly pine, and jack pine, using a preliminary impregnation of the chips.

Mitchell and Ross *(3)* in 1931 made a series of experimental soda cooks in which a low concentration of chemical was maintained in the digester throughout the cooking period. An experimental digester with a circulating liquor line was used, and small amounts of strong caustic were injected into the line at intervals during the cook to keep the concentration of free alkali approximately constant. A comparison of the resulting pulps with those obtained from standard cooks with the same degree of delignification in the same digester showed that the viscosity of the injection pulps was three times that of the standard pulps. The injection pulps had properties approaching those of sulphite pulps.

From studies on the use of concentrated alkali in pulping, Adlington and Ross *(4)* found that the dissolution of nonligneous materials passed through a maximum as the concentration of the cooking liquor was increased. They found that the use of highly concentrated solutions of caustic resulted in the solution of a minimum of the nonligneous constituents in a given period of time. By the use of 40% sodium hydroxide on conifers for 1.5 hours, they obtained 40% yields of a very light-colored and easy-bleaching pulp which, however, did not respond to beating.

In later work, Mitchell and Ross *(5)* studied the rate of removal of free alkali from cooking liquor by commercial-size poplar chips which were given a preliminary impregnation with water. They concluded that the diffusion of alkali through the wood was extremely rapid and that it should be possible to maintain a desired concentration of active alkali within the wood, provided the liquor circulating in the digester was fortified at the appropriate rate.

Bray and Curran *(6)* reported that increased concentrations of chemical in alkaline cooking liquor materially increased the rate of delignification of the wood and effected a more rapid decrease in the cellulose and alpha-cellulose contents of the pulps obtained. They found that decreasing the concentration had a beneficial effect on the screened yield in the case of kraft pulps and that, in the case of bleachable sulphate pulps, where an excess of chemical is necessary, a low concentration of chemical in the cooking solution conserved strength and bleaching agent in pulps cooked to a given yield.

Mitchell and Ross *(7)* pointed out the necessity for an excess of chemical at all times in the pulping of

spruce. They stated that, if the pH of the cooking solution were allowed to fall below a pH of 9, lignin bodies had a tendency to become insoluble in alkali.

Mitchell and Yorston *(8)* reported that lignin removal in soda digestions took place in three stages: first, the removal of about one third of the lignin of the wood within 15 minutes at 160° C.; second, the main delignification reaction extending over several hours, during which the rate of removal was proportional to the removable lignin present; third, an exceedingly slow removal of the last 1% of lignin. The authors suggested that the mathematical treatment used was probably applicable to pulping with sodium hydroxide at constant concentration.

Baker *(9)* pulped wood by starting with a fairly low alkali concentration and maintained this concentration as uniformly as possible throughout the cook by the injection of strong liquor. He obtained a higher yield of pulp, but a higher permanganate number and about the same strength as was obtained with standard cooking methods.

Arnold *(10)* made a series of kraft cooks on jack pine by injection methods which included a preliminary impregnation with black liquor. He obtained pulps which were 10% higher in bursting strength and 15% higher in tearing strength than average kraft pulps.

Impregnation of Chips

Hägglund and Schollin-Borg *(11)* experimented with the use of black liquor as a diluent during the cooking process. They reported no change in the rate of cooking, yield, lignin content, and strength of the pulp with the use of as much as 50% black liquor. A noticeable darkening in the color of the pulp was observed.

Wells, Staidl, and Grabow *(12)*, using a process disclosed by Kress and Wells *(21)*, impregnated chips by applying hydrostatic pressure to the digester filled with cooking liquor for 0.5 hour. Most of the liquor was then forced back to the liquor tank by applying steam, sufficient being left in the digester to begin direct cooking. This process resulted in a 16% saving in the amount of chemical required for the cook, a 5% increase in yield, a reduction in the amount of steam employed, and a reduction of the liquor volumes during the cook. The time required for impregnation was saved by a shortening of the cooking period.

Wells *(22)* disclosed the use of the impregnation cycle to remove the air from a digester before the cooking reaction; he *(23)* further disclosed the use of injection cooking in conjunction with impregnation and the elimination of air in alkaline cooking.

Conductometric Control of Cooking Liquor

Greer *(13)* applied automatic conductivity control to black liquor diffuser washings. He described an instrument which diverted the liquor to waste or allowed it to pass to recovery, according to the sodium oxide concentration. Yorston *(14)* suggested the use of the conductivity of the cooking liquor as a means of control in the soda process. He described a conductivity cell and circuit for this purpose. Venemark *(15)* described the application of a conductometric device to the waste waters of a sulphate plant. McElhinney, Whittemore, and Lynch *(16)*, Whittemore, Aronovsky, and Lynch *(17)*, and Crocker, Dow, Ripanti, and Nolan *(18)* have applied conductivity methods to the analysis of black liquors from the alkaline processes.

Materials, Apparatus, and Methods

The purpose of the present work was to investigate the control of injection pulping by means of the conductivity of the cooking liquor and to examine the pulps obtained from controlled injection cooks.

A conductometric instrument was planned which would permit measurement of the conductivity of the cooking liquor circulating through the digester system. Hardwood pulping with sodium hydroxide as the active chemical was chosen in order to have a simple system of ions in the cooking liquor.

Wood

The cottonwood employed in this study was furnished by the Arkansas Forestry Commission. It is typical of the rapidly growing species which abounds in the Mississippi River bottom lands in the central United States. This particular half cord was cut in Jefferson County, Arkansas, on October 7, 1942, from a pure stand of cottonwood grown on alluvial sandy loam soil. The average diameter of the stand was estimated at 15 inches. The wood was received at the Institute in the form of unbarked pulpwood sticks, about 4 feet in length. The physical constants are given in Table I.

TABLE I.—PHYSICAL CONSTANTS OF COTTONWOOD

Sample	Density (moisture-free volume) lb./cu. ft.	Average Diameter in.	Rings per Inch
1	38.6	12	2.5
2	27.4	8	1.5
3	31.2	9.5	1.6
4	26.8	8	1.5
5	28.1	8	1.3
Average	30.4	9	1.7

Control Apparatus

The soda black liquor used in the development of a conductometric device was obtained from a cook which was not blown. At the end of the cook, the liquor was drained off through a condenser. The pulp was discarded.

Various types of conductometric devices were investigated. They were evaluated according to their ability to indicate differences in the sodium hydroxide content of pure solutions and of black liquors at room temperature *(19)*.

A conductivity cell was assembled which consisted of two No. 1 automobile spark plugs (the type used in Ford Model T motors) fitted into a ¾-inch cross fitting equipped with ½-inch bushings to accommodate the plugs. The electrode on the metal shell of the spark plugs was removed. The ¾-inch cross fitting was used with the idea of eventually installing the assembly in the circulating liquor line of an experimental stationary vertical digester. The cell was connected to a voltmeter-ammeter circuit and the conductivities of various solutions were measured with 1 volt a.c. across the cell terminals. The arrangement was quite sensitive at room temperatures, although it was evident that the greatly increased conductivities at cooking temperatures would be beyond the indicating range of the voltmeter-ammeter circuit.

In some preliminary experiments to determine the effect of temperature on conductivity, a variable series resistance was installed in the voltmeter-ammeter circuit in order to keep the conductivity readings within the range of the meters. This series resistance

was found to decrease the sensitivity of the device materially.

Shunt resistances for the ammeter in the circuit were calculated and installed. Two shunts were installed with a three-way switch, so that the circuit could be used with the ammeter unshunted, or shunted by either shunt. The shunt resistances were of such magnitude as to shunt nine tenths and forty-nine fiftieths of the current, thus giving factors of 10 and 50, respectively.

A series of runs was then carried out to adapt the conductivity cell to the circulating system of a stationary iron digester. The cross fitting was installed in the circulating liquor line between the digester and the pump. At this point the flow was smooth, and the temperature of the liquor did not undergo rapid changes.

At cooking temperatures and pressures, the spark plugs in the conductivity cell leaked excessively. This difficulty was overcome by packing the plugs with asbestos cord. Pipe dressing was applied to the threads before the plugs were inserted into the cross fitting. After a few hours under cooking conditions, the spark plugs often developed a small leak between the central electrode wire and the porcelain. A leak of this type affected the conductivity readings to such an extent as to render any further work with these plugs worthless. Leakage of this type was inhibited by filling in the tips around the central electrode with porcelain cement. Toward the end of the work, spark plugs had been developed to a point where they gave satisfactory service for four cooks. When the spark-plugs in the conductivity cell were changed, the conductivity readings were shifted slightly.

To make possible the removal of liquor samples for analysis during the cook, a sample line was installed between the conductivity cell and the pump. The sample line consisted of a ¼-inch globe valve and two water-cooled Pyrex condensers. The condensers were inclined for good drainage.

Because conductivity varies strongly with temperature, an accurate indication of the temperature

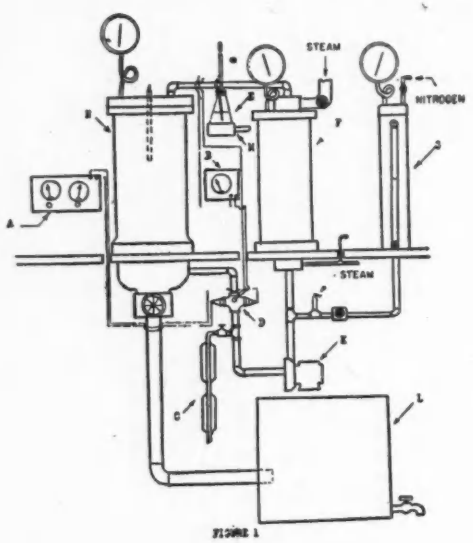

FIG. 1

Experimental Digester. A—Ammeter-Voltmeter Circuit. B—Thermocouple Galvanometer. C—Sampling Line. D—Conductivity Cell. E—Constant Temperature Junction. F—Heater. G—Injection Cylinder. H—Digester. J—Safety Valve. K—Pump. L—Blowpit. M—Hot Plate.

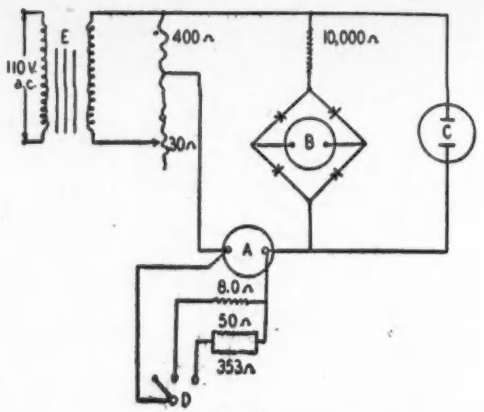

FIG. 2

Conductometric Circuit. A—A.C. Milliammeter—0-25 m.a. Resistance—394 Ω. B—D.C. Ammeter Used with 4-Way Instrument Rectifier (Used as a Voltmeter). C—Conductivity Cell. D—Three-Way Switch. E—Doorbell-Type Transformer.

of the cooking liquor was needed at the point where the conductivity was measured. To meet this requirement, a thermocouple well was built into the conductivity cell and a thermocouple circuit of Alumel P and Chromel P wire was installed. A flask of boiling water was used for the constant temperature junction.

A sketch of the digester with the control apparatus in its final form is given in Fig. 1, and a wiring diagram of the conductometric circuit is shown in Fig. 2.

To determine the relationship between conductivity and temperature, white liquor containing 40.5 grams per liter of sodium hydroxide was circulated through the digester while steam was fed to the heater. Conductivity readings were taken as the temperature was brought up to cooking temperature. The same procedure was followed for black liquor containing 1.6 grams of sodium hydroxide per liter. The curves obtained are shown in Fig. 3.

Wood and Cooking Liquor

The wood was prepared, screened, and made up into representative cooking charges in the usual manner. The cooking liquor was prepared from technical grade caustic (76% sodium oxide) and tap water. Analyses of the liquor samples taken during the cook and of the pulps were made by standard methods.

Cooking Procedures for Injection Cooks

Cooks 8, 9, and 10 were injection cooks. In these

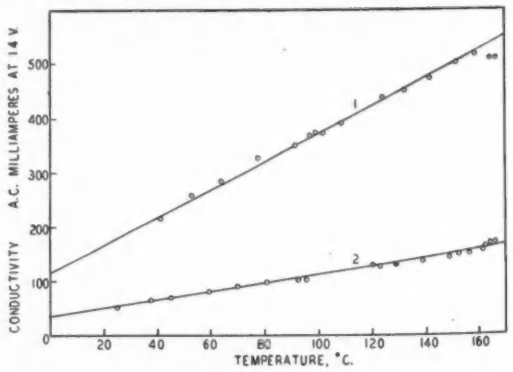

FIG. 3

Conductivity-Temperature Curves. 1—White Liquor (40.5 g. NaOH/1). 2—Black Liquor (1.6 g. NaOH/1).

cooks the digester was loaded in the usual manner, the system was filled with 38 liters of impregnating liquor, and the chips and liquor were allowed to stand overnight.

The steam was turned on and nitrogen pressure was applied to the injection cylinder. The valve below the cylinder was opened slightly, and the pressure in the digester was raised to 103 pounds per square inch in Cook 8, 118 pounds per square inch in Cook 9, and 102 pounds per square inch in Cook 10. The pressure was held for 15 minutes in Cook 8, during which time the temperature reached 97° C. In Cook 9, temperatures as high as 116° C. were reached and the pressure was held for 30 minutes. In Cook 10, the temperature was held at 102° C. during the 30 minutes at pressure.

After the pressure was relieved, 20 liters of the impregnation liquor were drawn off and a sample was taken for analysis.

The injection cylinder was filled with white liquor containing 221 grams of sodium hydroxide per liter. In Cooks 8 and 9, before the steam was turned on, 1175 ml. of this liquor were forced into the digester liquor line. In Cook 10, 775 ml. were forced in. The steam was turned on, and the digester was brought to temperature in 25 minutes by a straight line rise. Injections were made according to a predetermined schedule for the first hour after the steam was turned on in Cooks 8 and 9 and for the first 30 minutes in Cook 10. For most of the remainder of the cooks, injections were made in 100-ml. increments at such a rate as to keep the conductivity constant at the value attained after 1 hour of cooking. Toward the end of the cooks, the additions were made in 50-ml. increments. Liquor samples for analysis were taken every 20 minutes during the first part of the cooks and about every hour toward the end.

Cook 8 was held at 170° C. for 4 hours, and Cooks 9 and 10 were held at that temperature for 5 hours. The blowing and washing procedure was the same as that followed in the standard cooks.

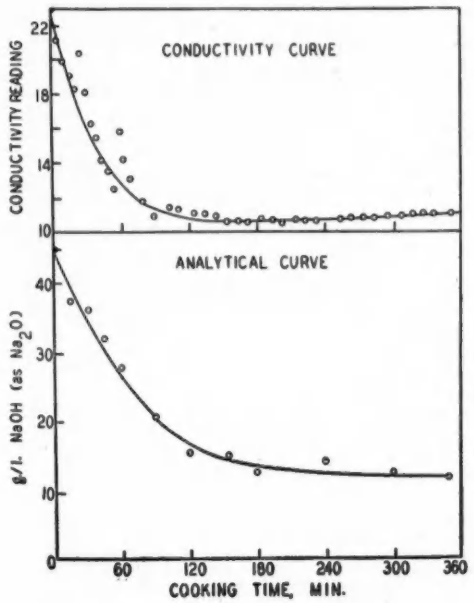

FIG. 4

Conductivity (top) and Analytical (bottom) Curves for Cook 4.

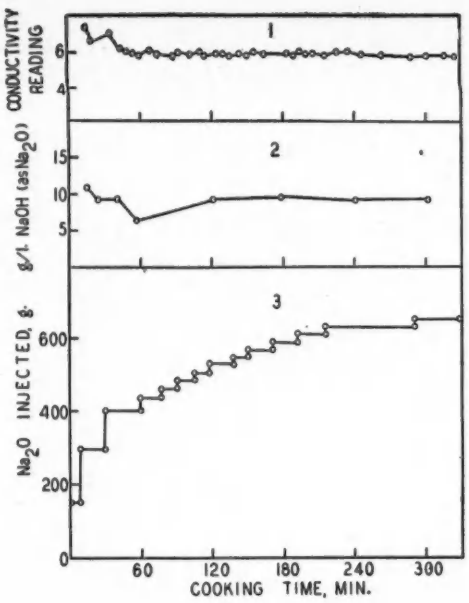

FIG. 5

Conductivity (1), Analytical (2), and Injection (3) Curves for Cook 8.

Experimental Results

COOKS 4, 5, AND 7

Cooks 4, 5, and 7 were standard soda cooks, the purpose of which was to study the conductivity changes and the rate of chemical consumption during a typical cook. The curves in Fig. 4 (from Cook 4) show that the conductivity dropped rapidly to reach an almost constant value after about 1.5 hours at temperature. All the readings on this curve are corrected to 166° C., the final liquor temperature at the cell. The curves in Fig. 3 were used to make the corrections. The analytical curve in Fig. 4 shows that the consumption of sodium hydroxide from the cooking liquor was very small after 1.5 hours at temperature. A definite relationship between the conductivity and the amount of sodium hydroxide in the cooking liquor was indicated.

At a freeness of 700, the resulting pulp showed a bursting strength of 90 points per 100 pounds and a tear factor of 0.95.

Cooks 5 and 7 showed similar results.

COOK 8

Cook 8 was an injection cook. Impregnation was carried out at 102 to 103 pounds per square inch and about 95° C. for 15 minutes. Sixty-nine per cent of the sodium hydroxide in the impregnation liquor was taken up during this period.

A predetermined injection schedule was used for the first hour of injecting. For the remainder of the cook, it was decided to inject such amounts as to keep the conductivity between 6.1 and 5.9, corresponding to the reading at the end of the first hour. The reading at this point was selected, after studying the conductivity and analytical curves of the three standard cooks, with the intention of keeping the sodium hydroxide concentration somewhat in excess of that remaining in the cooking liquor at the end of a standard cook.

The conductivity curve (Fig. 5) shows that the conductivity was held quite successfully between the limits selected. The liquor analysis curve indicates

that the sodium hydroxide concentration was held between 15.5 and 10.4 grams per liter (as sodium oxide) during the cook.

The injection schedule indicates that a total of 4180 ml. of fresh cooking liquor was used, as compared with 6330 ml. employed in the standard cooks. Some fresh liquor was required in making up the impregnation liquor from the black liquor of the previous cook. Assuming a 5% soda loss in washing, 593 ml. of white liquor would be required. Thus, an overall saving of 25% on chemical would be obtained. It should also be noted, however, that this cook was blown after 4 hours at temperature and that the permanganate number was 9.4, which was somewhat higher than that of the standard cooks.

A yield of 46.3% was obtained. The screenings amounted to 13% of the unscreened pulp, indicating poor circulation at some point in the digester. A bursting strength of 102 points per 100 pounds and a tear factor of 1.23 were obtained at a freeness of 700.

Cook 9

Cook 9 was a second injection cook, in which impregnation was carried out at 98 to 118 pounds per square inch and 50 to 116° C. for 0.5 hour. Eighty-seven per cent of the sodium hydroxide in the impregnation liquor was consumed in this interval. Injection was carried out according to the same schedule used in Cook 8 for the first 47 minutes. At this point, the nitrogen supply was unexpectedly exhausted and further injection was impossible for 25 minutes. This lapse in injection had a pronounced effect on both the conductivity and the analytical curves. A relatively large quantity of liquor was introduced as soon as the nitrogen supply was replenished. This amount raised the conductivity to 8.0. The conductivity (as shown in Fig. 6) seemed to level off at about 7, and it was decided to hold it between 6.9 and 6.7 for the remainder of the cook.

The analytical curve (Fig. 6) shows that the

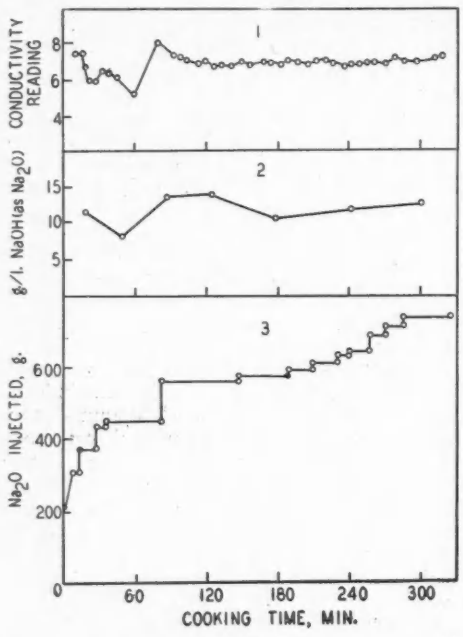

FIG. 6
Conductivity (1), Analytical (2), and Injection (3) Curves for Cook 9.

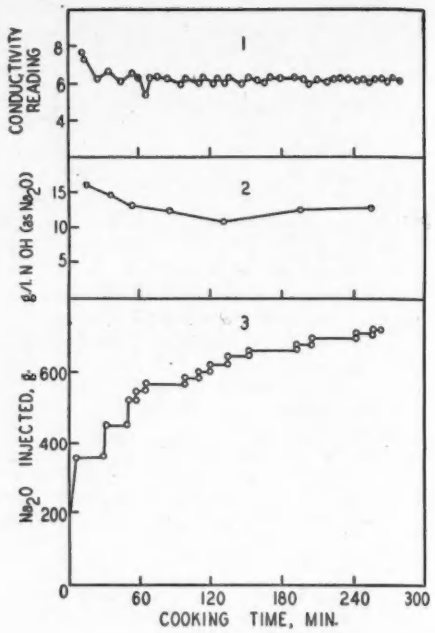

FIG. 7
Conductivity (1), Analytical (2), and Injection (3) Curves for Cook 10.

sodium hydroxide concentration was held between 8.0 and 13.6 grams per liter (as sodium oxide) during the cook.

A total of 4360 ml. of white liquor was employed during the cook. This compares with the 6330 ml. employed in standard cooks with the same permanganate number, although some white liquor was used in making up the impregnation liquor. Assuming a 5% loss on washing, 643 ml. would be required. An overall saving of 21% would be effected.

This cook was held at temperature for 5 hours. The permanganate number was 8.1 and the yield was 44.0%. The screenings yield (amounting to 9.9% of the unscreened pulp) again indicated poor circulation in the digester.

At a freeness of 700, the bursting strength was 97 points per 100 pounds, and the tear factor was 1.17.

Cook 10

Cook 10 was an injection cook in which the initial amount of chemical in the digester was about 75% of that used in Cooks 8 and 9. Impregnation was for 30 minutes at 102 pounds per square inch and 102° C. Eighty-seven per cent of the sodium hydroxide in the impregnating liquor was taken up. Injection was carried out according to schedule while coming up to temperature. During the 5 hours at temperature, the injections were made in such amounts as to hold the conductivity readings between 6.1 and 5.9.

The analytical curve (Fig. 7) indicates that very good control of the sodium hydroxide concentration was obtained. This concentration was held between 6.4 and 10.7 grams per liter (as sodium oxide), although for the last 3 hours the range was narrowed to between 9.4 and 9.6 grams per liter.

The white liquor requirement showed an overall saving of 28% of the chemical used in the standard cooks. The permanganate number was 10.4, indicating that this cook was more raw than any of the previous ones. The yield was 47.7%; the screenings amounted to 8.1% of the unscreened pulp.

In this cook, as well as in Cooks 8 and 9, the increased amount of screenings over that obtained in the standard cooks should be considered in connection with the saving in the white liquor requirement. If more of these screenings had been cooked sufficiently to become accepted stock, additional white liquor would probably have been consumed.

Thus, if less screenings were produced, the saving in white liquor would probably be decreased somewhat per unit of wood used, although it is obvious that the yield of good pulp would be increased under these circumstances with a proportional decrease in liquor required per unit of pulp produced.

In the case of Cook 10, the bursting strength at a freeness of 700 was 110 points per 100 pounds and the tear factor was 1.16.

Beater Evaluation Curves

Beater evaluation curves are given in Fig. 8 for Cook 4 (a typical standard cook) and for Cook 9 (a typical injection cook with the same permanganate number). The beating time to reach a freeness of 700 was 33 minutes for the standard cook and 25 minutes for the injection cook. Cook 5 required 31 minutes of beating and Cook 7 required 28 minutes of beating to reach this freeness. Cook 8, on the other hand, required 37 minutes. This seems logical, however, when one considers its permanganate number of 9.4. The injection pulp appears to hydrate more easily than the standard pulp of the same permanganate number.

Summary

It was found possible in soda cooks to incorporate in the circulating liquor line of the experimental digester a conductivity apparatus which would allow continuous evaluation of the sodium hydroxide concentration during the course of the cook. Sensitivity to changes in free hydroxide content was sufficient to permit the controlled injection of fresh chemical at such a rate that the amount of active chemical was held at practically a constant value. The analytical data indicated that the concentration of the active chemical was maintained between 15.5 and 10.4 grams per liter (as sodium oxide) in Cook 8, between 13.6 and 8.0 grams per liter in Cook 9, and between 10.7 and 6.4 grams per liter in Cook 10.

The pulps produced by soda injection cooking with conductometric control were superior in strength to those prepared by standard soda cooks. Cook 8 (an injection cook with a permanganate number of 9.4) gave a pulp which was 12% higher in bursting strength and 20% higher in tearing strength than the average of three standard soda cooks with an average permanganate number of 8.1. The pulp from Cook 9 (an injection pulp with a permanganate number of 8.1) was 7% higher in bursting strength and 15% higher in tearing strength than the average of the standard cooks. Cook 10 (an injection cook with a permanganate number of 10.4) gave a pulp which was 21% higher in bursting strength and 14% higher in tearing strength than the standard pulps. The injection pulps were lighter in color than the standard pulps, and that from Cook 9 hydrated more readily than the standard pulps.

The results obtained in Cook 9 indicate that, with conductometric control, failures in equipment which would cause loss of the cook in conventional operation made it possible, in this particular case, to save the cook and secure pulp of outstanding quality.

With regard to commercial application, conductometric control has the very desirable feature of not requiring close control of the amount of chips charged into the digester or their moisture content. The concentration of the white liquor is not critical, although it would be quite critical if a predetermined injection schedule had to be followed. Permanent electrodes for the conductivity cell could probably be constructed by an instrument company having the facilities for this type of work.

Steam pressure or a high-pressure centrifugal pump capable of withstanding caustic soda would be used in place of nitrogen for forcing the injection liquor into the circulating line. An additional tank would be required for the collection of the strong black liquor as it was washed from the pulp after blowing. This liquor would be employed for impregnation and would then be recovered in the usual manner. By means of this procedure, it is possible to utilize more completely the active alkali contained in the black liquor and thereby bring about a considerable saving in the amount of active alkali required. Overall savings of 25% in Cook 8, 21% in Cook 9, and 28% in Cook 10 were indicated for approximately equal yields of screened pulp, although an increased amount of screenings was obtained.

The liquor circulation rate in the experimental digester gave a complete turnover of the liquor about every 2 minutes. This is rather high for commercial practice, although recent installations of kraft digesters *(20)* have been reported to give a complete liquor turnover in 5 minutes. The more rapid the circulation, the smaller would be the lag in conductometric control.

This method of pulping is covered by patent applications filed in the United States and Canada.

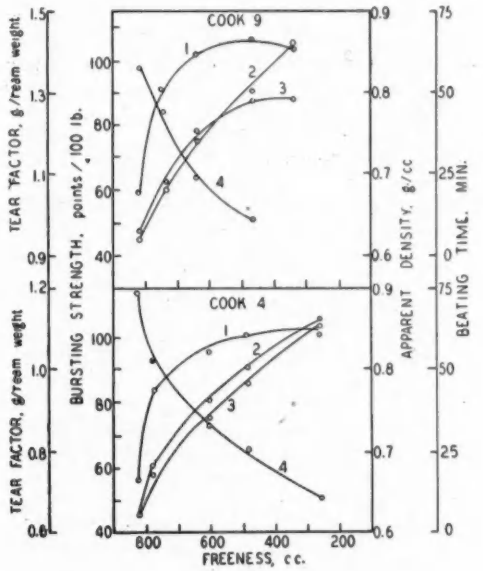

Fig. 8

Beater Evaluation Values: 1—Burst. 2—Time. 3—Apparent Density. 4—Tear.

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TAPPI and War Agencies Meet

In an effort to assist the Army and Navy and other war agencies in unifying their specification testing procedures a group sponsored by the Technical Association of the Pulp and Paper Industry met at the Commodore Hotel, New York, N. Y., on Friday, November 3, 1944. The scope of the meeting was the selection and standardization of tests relating to the use of fibrous materials and accessory components for packaging and packing commodities for war purposes. Major J. d'A. Clark, Chairman of the TAPPI Testing Division presided.

As a result of this meeting the following objectives were attained:

1. A preparation of a complete list of the material properties which are applicable and important to the war effort.

2. A tabulation of test methods for each of these properties, as far as is known.

3. A survey of the list to determine which property tests require correlation and standardization.

4. Allocation of the desired test methods to appropriate committees or groups for action.

Those present were: Edward Dahill, Freight Container Bureau, New York, N. Y.; R. H. Hurst, Quartermaster Research and Development Laboratory, Washington Q. M. Depot, Alexandria, Va.; G. R. Sears, Institute of Paper Chemistry, Appleton, Wis.; Lt. J. E. Kennedy, Transportation Corps, Brooklyn, N. Y. Army Base; J. D. Malcolmson, Robert Gair Company, New York, N. Y.; E. A. Reehl and O. C. Rutledge, General Electric Company, Schenectady, N. Y.; Lt. Commander B. R. Lewis and Ensign Nicholas Scharff, U.S.N.R Containers Section, Bureau of Supplies and Accounts, Washington, D. C.

H. B. Esselen, Office of Civilian Requirements, WPB, Washington, D. C.; Harlan W. Bird, Specifications Committee, WPB, Washington, D. C.; W. B. Lincoln, Jr., Inland Container Company, Indianapolis, Ind.; Earl R. Stivers, Package Research Laboratory, Rockaway, N. Y.; W. H. Graebner, Marathon Corporation, Menasha, Wis.; E. G. Mullen, Consultant, Container Coordinating Committee WPB, Washington, D. C.; F. F. Newkirk, Sisalkraft Company, Attleboro, Mass.; T. L. Giles, British Air Commission Washington, D. C.; Arno W. Nickerson, consulting engineer, New York, N. Y.; B. W. Scribner, chief, Paper Section, National Bureau of Standards, Washington, D. C.; M. A. Krimmell, Hammermill Paper Company, Erie, Pa.; Lewis S. Reid, Metropolitan Life Ins. Company, New York, N. Y.; Major J. d'A. Clark, Chicago Quartermaster Depot, Chicago, Ill.

F. S. Leinbach, Riegel Paper Corporation, New York, N. Y.; M. W. Forest, Army Service Forces Headquarters, Washington, D. C.; Henry A. Wolsdorf, War Production Board, Washington, D. C.; Lt. Bruce Graham, Container Section, Navy Purchasing Office, New York, N. Y.; T. J. Gross, Container Testing Laboratories, New York, N. Y.; Robert J. Meagher, Folding Paper Box Association, Chicago, Ill.; Lt. John W. Widdefield, Signal Corps Depot, Philadelphia, Pa.; B. Evans Jones, Voorhees, Walker, Foley & Smith, New York, N. Y.; R. G. Macdonald and R. T. Bingham, Technical Association of the Pulp and Paper Industry, New York, N. Y.

Delaware Valley Discusses Foreign Pulp

The Delaware Valley Section of the Technical Association of the Pulp and Paper Industry met at the Engineers Club, Philadelphia, Pa., on Friday, November 3. A. M. Bixler of the Riegel Paper Corporation presided. The principal speaker was Johannes Westergaard, vice president of Castle & Overton who talked on the Future Prospects and Developments in the Foreign and Domestic Pulp Industry.

Those present at the dinner preceding the meeting were: Herbert Ash, W. L. Baummer, A. M. L. Bixler, S. G. Briscoe, W. J. Burke, L. K. Burnett, J. M. Chestnutt, W. F. Connolly, C. M. Connor, O. C. Cordes, Thage Dahlgren, J. D. Davis, Edward DeLauter, J. C. Dieffenderfer, W. P. Dohne, Paul Easton, J. M. Farnum, Harrison J. Farra, Benj. K. French, George H. French, E. A. Georgi, E. N. Glauner, Jesse Good, Lois V. Hans, J. C. Harper, Jr., A. M. Hartley, V. Jacobsen, L. T. Kratz, W. H. Langhrey, Willard H. Lapp, Lt. R. H. Lippincott, E. G. Lyons, John Macadam, Raymond McGinley, Alex McInnes, George B. Martin, Mrs. Mary C. Mathews, Edward C. Molin, W. B. Morehouse, I. Newman, L. Newman, E. Atlee Ney, J. A. Paciello, Joseph E. Plumstead, R. W. Porter, Homer F. Ray, C. W. Rivise, John Roslund, Jules J. Rust, Jr., Claude J. Ryder, Edward A. Shallcross, Sr., J. Carl Schmidt, Chas. A. Schubert, A. J. Stull, George M. Suydam, G. C. Walton, Kurt Wandell, Kingdon R. Watt, A. E. Waugh, Johannes Westergaard and R. Wiggins.

Report Large Sales of Chemicals

American Resinous Chemicals Corporation reports sales of industrial chemicals, particularly synthetic rubber compounds and resin and lacquer formulations for coating, finishing, impregnating and laminating, amounting to $1,100,000 for the six months period ending June 30, 1944. The company announces the opening of a new pilot plant and additional research laboratories for further investigation of polymerization to produce new resins, and to coordinate developments in synthetics for paint, plastics, paper, textiles, leather and specialty rubbers.

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Are you interested in—

CONTROLLED PARTICLE SIZE AND SETTLING RATES FOR LIME, BY METHOD OF REBURNING AND SLAKING?

Write us making appointment to have a talk with our engineer.

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J. Andersen & Company

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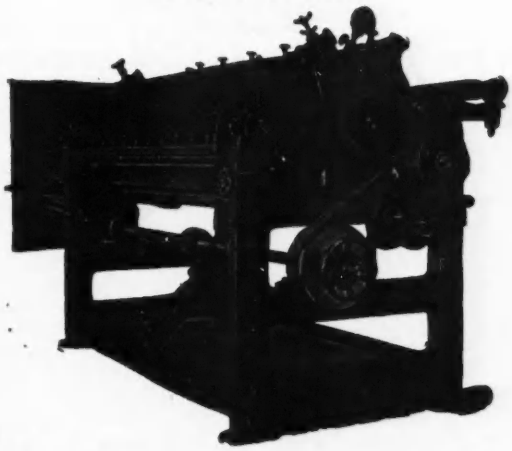
NEW YORK

Importers of Pulp

BLEACHED AND UNBLEACHED SULPHITE, KRAFT PULP AND GROUND WOOD

MODEL 28

ROLLER BEARING CUTTER



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LAWRENCE, MASS.

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SINGLE, DUPLEX AND DIAGONAL PAPER CUTTERS
CUTTER KNIVES, PATENT TOP SLITTERS.

New York Paper and Pulp Market Review

Relief From Newsprint and Book Shortage Depends Upon More Pulpwood Harvested This Season — Wood Pulp Situation Critical — New Rags Active — Mill Demand Urgent For Paper Stock.

Office of the PAPER TRADE JOURNAL,
Wednesday, November 8, 1944.

Wholesale demand for paper and paper products continues so substantially in excess of supply that the paper situation is expected to become more acute in the future. No relief from shortages in paper is looked for by the War Production Board until the middle of next year. This critical situation created by the enormous requirements of the war, appears to be reflected in a fuller realization throughout the market that current major problems demand the greatest possible cooperation of all. The presidential election seems to have strengthened this feeling, although no direct effect of the election can be discernible in metropolitan markets. Opinion is expressed in some quarters, however, that with the political leadership for the next four years established, closer unity and an even greater cooperative effort by all Americans may follow.

The index of general business activity for the week ended October 28 rose to 137.3, from 137.2 for the previous week, compared with 139.1 for the corresponding week last year. The index of paper board production was 128.5, compared with 143.2 for the previous week, and with 133.9 for the corresponding week last year.

Paper production for the week ended October 28 was estimated at 92.7%, compared with 88.5% for 1943, with 92.9% for 1942, with 108.6% for 1941, and with 85.6% for the corresponding week for 1940.

Paper board production for the week ended October 28 was 95.0%, compared with 94.0% for 1943, with 84.0% for 1942, with 99.0% for 1941, and with 80.0% for the corresponding week for 1940.

Wood Pulp

The current short supply of wood pulp for newsprint, publication, and book paper is not expected to be materially improved unless more pulpwood can be harvested. Canada's output of pulpwood is expected to be increased during the 1944-45 season, but the effects of this output and the possibility of imports from Sweden would not be noted in the supply situation in pulpwood and wood pulp until about the middle of next year.

Rags

Mill demand for new cotton cuttings continues active in all grades. Prices are firm at ceilings.

The old cotton rag market continues to reflect less activity than a few weeks ago and is reported at this date no better than the relatively moderate activity of last week. Roofing mills are taking supplies steadily. Old whites and blues are reported in moderate demand at this date.

Old Rope and Bagging

Demand for old rope continues steady. Major grades are firm at ceiling levels.

Demand for scrap bagging continues to be reported limited, with buying in light volume this week. Prices continue nominal.

Old Waste Paper

Mill demand for waste paper continues urgent. The November 6 report of the Newspaper Committee of the Victory Waste Paper Campaign, indicates monthly collections of paper stock now averages 585,000 tons. The WPB reports receipts in September totaled 574,000 tons and consumption aggregated 568,000 tons. Inventories are, therefore, rising slowly. Some of the largest mills have only one or two days' supply.

Collections of old corrugated containers are reported improved. Prices of all grades of paper stock are firm at ceiling levels.

Twine

Demand is good for all available grades of twine. No change in the market has been reported this week. Prices continue firm.

Reports on Pulpwood Prospects

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., November 6, 1944—It is understood that about 5,000 prisoners of war of different nationalities will this year be given an opportunity to work in the bush cutting pulpwood. Past experience has indicated, however, that relatively poor work is to be expected from war prisoners. The efficiency of bush workers is said to have declined in recent years. Last year the wood cut per man was not high. This condition is not peculiar to the pulpwood industry, however, as it is noticeable in most lines of endeavor and is a direct result of the new independence and indispensability felt by workers because of the acute labor shortage. Given a reasonable fall of snow during the coming winter, which not only facilitates the drawing of pulpwood to the dumping depots on the banks of lakes and rivers, but also raises the water levels and facilitates the floating of the wood to the mills, along with the campaign to direct men to this class of employment, a reasonably satisfactory cut is expected.

Philbrook and Rooney Promoted

Warren R. Philbrook, formerly manager of the Carteret, N. J. Plant of Westvaco Chlorine Products Corporation has been appointed industrial relations director for all Westvaco plants. Fred S. Rooney, previously assistant to the vice-president of operations, has been made acting manager of Westvaco's Carteret plant.

P. Flaherty Returns to Storrs & Bement

BOSTON, Mass., October 30, 1944.—Peter Flaherty, honorably discharged from the armed forces after two years, has returned to the Storrs & Bement Company as superintendent of the warehouse. The position is a promotion, as he was shipper before he entered the service.

Another point is

LONGER BURRING CYCLES

PULP Stones by Carborundum operate on long, burring cycles because of their scientifically controlled structures—their assured durability.

Long, burring cycles are important. Invariably there is a change in the quality of the pulp with each burring.

Less frequent burring obviously means fewer variations in pulp—a longer sustained operation at a given quality standard.

Strength of design and the fact that they are produced in various structures are other important things to remember about Pulp Stones by Carborundum. Made in Aloxite Brand Aluminum Oxide and Carborundum Brand Silicon Carbide. The Carborundum Company, Niagara Falls, New York.

Pulp Stones by **CARBORUNDUM**

Sales Offices and Warehouses in New York, Chicago, Philadelphia, Detroit, Cleveland, Boston, Buffalo, Pittsburgh, Cincinnati, St. Louis, Grand Rapids

(Carborundum and Aloxite are registered trade marks of and indicate manufacture by The Carborundum Company)

PREPARE OLD PAPER STOCK FOR DE-INKING

A BAUER Pulper will *thoroughly defiber it without cutting*. There is no metal to metal contact; plates are set from .100" to .325" apart. The ink will be freed mechanically by the disk action.

By the complete defibering an increased surface area is presented for the chemical during cooking. Washing is easy because the Freeness is high.

A 300 HP *BAUER Pulper* will treat 125 - 250 tons of old magazine or old news stock per day. Freeness, after defibering and washing, will be 550 plus.

THE BAUER BROS. CO.
SPRINGFIELD, OHIO

Bauer

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, November 8, 1944.

BLANC FIXE—Quotations on blanc fixe continue unchanged. Demand is reported moderate. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is quoted at $60 per ton, f.o.b. works.

BLEACHING POWDER—Current demand is heavy. Supply situation is reported much improved with decreased government demand. Quotations are unchanged. Prices on bleaching powder range from $2.50 to $3.10 per 100 pounds, in drums, car lots, at works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 24 cents per pound; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound, f.o.b. shipping point.

CAUSTIC SODA—Demand continues very heavy. Production high but supply is inadequate. Market is tight. Solid caustic soda is quoted at $2.30 per 100 pounds; flake and ground is quoted at $2.70 per 100 pounds; all in drums, car lots, at works.

CHINA CLAY—Quotations on china clay are unchanged. Current demand is reported fair. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mine. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Demand reported heavy with essential requirements met. Paper allocated 43,196 tons in final quarter. Quotations are unchanged. Chlorine is currently quoted at $1.75 per 100 pounds, in single unit tank cars, f.o.b. works.

ROSIN—The rosin market reports prices unchanged on most grades this week. "G" gum rosin is currently quoted at $5.79 per 100 pounds, in barrels, at Savannah. "FF" rosin is currently quoted at $5.75 per 100 pounds, in barrels, at New York. Seventy per cent gum rosin size is currently quoted at $6.06 per 100 pounds, f.o.b. works.

SALT CAKE—Prices on salt cake are reported unchanged for the current week. Consumption is reported moderate for the week. Domestic salt cake is quoted at $15 per ton, in bulk. Chrome salt cake is quoted at $16 per ton. All prices in car lots, f.o.b. shipping point.

SODA ASH—Heavy demand continues for domestic requirements and market is tight. Shipments in bulk prompt; delivery in bagged lots delayed. Quotations continue unchanged. Current prices, car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Record corn crop improves prospect of supply situation in future. No current change. Starch prices firm. The pearl grade is quoted at $3.72 per 100 pounds; powdered starch at $3.83 per 100 pounds; all prices in bags, car lots f.o.b. Chicago.

SULPHATE OF ALUMINA—Demand reported good. Quotations continue unchanged. The commerical grades are quoted at from $1.15 to $1.25 per 100 pounds, in bags, car lots, f.o.b. works. The iron free is currently quoted at $1.85 per 100 pounds, in bags, at works.

SULPHUR—Quotations on sulphur continue to conform to prevailing market prices. Demand active. Annual contracts are quoted at $16 per long ton, f.o.b. mines; the price at Gulf Ports is $17.50 per long ton.

TALC—Prices on talc continue unchanged. Demand good. Domestic grades are currently quoted at from $16 to $21 per ton at mines; Canadian at $24 per ton. All prices in car lots.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

Standard News, per ton—
Roll, contract... *$58.00 @ —
Sheets ..... 66.00 " —
* OPA Maximum Price.

Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill

Superstandard Wrapping ....*$5.25 @ —
No. 1 Wrapping... *5.00 " —
Standard Wrapping*4.75 " —
Standard Bag.....*4.375 " —
* OPA Manufacturers' Prices.

Tissues—Per Ream—Carlots

White No. 1..... 1.12½" —
White No. 1 M. G. 1.10 " —
White No. 1½.... 1.00 " —
White No. 2..... .90 " —
Anti-Tarnish M.F.. 1.20 " —
Colored ..... — " —
Kraft ..... .95 " —
Manila ..... .90 " —

Toilet—1 M. Sheets—Per Case

Unbleached ..... 4.25 " —
Bleached ..... 5.70 " —
Unbl. Toilet, 1 M. 4.16 " —
Bleached Toilet.... 5.70 " —

Paper Towels, Per Case—

Unbleached, Jr..... 2.20 " —
Bleached, Jr. ..... 3.20 " —

Manila—per cwt.—C. l. f. a.

No. 1 Jute.....11.25 @ —
No. 1 Manila Wrapping, 35 lb..... 6.00 " 6.25
No. 2 Manila Wrapping, 35 lb..... 5.75 " 6.00

Boards, per ton—

News .....*48.00 @ —
Chip .....*48.00 " —
Sgl. Mla. Ll. Chip*60.00 " —
White Pat. Coated*75.00 " —
Kraft Liners 50 lb.*63.00 " —
Binders Boards... 84.00 " 116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	29.90 " 35.00
75% Rag	23.00 " 27.00	24.15 " 28.25
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds	Ledgers
No. 1..	$10.55@$12.75	$11.70@$14.25
No. 2..	9.65 " 11.75	10.80 " 13.25
No. 3..	9.20 " 11.25	10.35 " 12.50
No. 4..	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper. Delivered in Zone 1:

No. 1 Glossy Coated...$13.65@$15.50
No. 2 Glossy Coated... 12.40 " 14.00
No. 3 Glossy Coated... 11.60 " 13.25
No. 4 Glossy Coated... 11.15 " 12.75
No. 1 Antique (watermarked) ..... 10.25 " 11.75
No. 2 Offset ..... 9.60 " 11.00
A Grade E. F..... 9.35 " 10.75
A Grade S. & S. C... 9.60 " 11.00
B Grade E. F. ..... 8.85 " 10.25
B Grade S. C. ..... 9.10 " 10.50
C Grade E. F. ..... 8.55 " 9.75
C Grade S. C. ..... 8.80 " 10.00
D Grade E. F. ..... 8.25 " 9.50
D Grade S. & S. C. .. 8.50 " 9.75
Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight Not Exceeding OPA Allowances.

Bl. Softwood Sulphite..... $86.00
Unbl. Softwood Sulphite..... 74.00
Bl. Hardwood Sulphite..... 83.50
Unbl. Hardwood Sulphite..... 71.50
Bl. Mitscherlich 81.00
Unbl. Mitscherlich ..72.00 @ 82.00
N. Bleached Sulphate 86.00
S. Bleached Sulphate 79.00
N. Semi-Bleached Sulphate... 82.00
S. Semi Bleached Sulphate... 75.00
N. Unbl. Sulphate..... 73.00
S. Unbl. Sulphate 63.50
Bl. Soda 72.00
Unbl. Soda 68.00
Groundwood 50.00

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area).....	10.50
West Coast (out area).....	16.50

	50%-80% Air Dry Weight
Northeast	11.50
Lake Central	11.50
Southern	14.00
West Coast (in area).....	9.50
West Coast (out area).....	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices.

Domestic Rags

New Rags
(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—
New White, No. 1.. 6.50 @ 7.25*
Silesias No. 1..... — " 5.75*
New Unbleached... 6.75 " 7.50*
Blue Overall ..... — " 5.50*
Fancy ..... — " 3.50*
Washables ..... — " 3.00*
Bleached Khaki Cuttings ..... — " 4.25*
Unbleached Khaki Cuttings ..... — " 3.50*
* OPA Maximum Prices.

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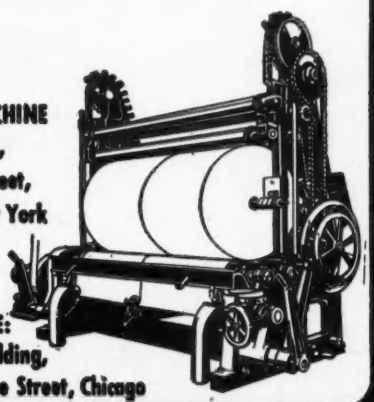
REWINDERS SLITTERS

CAMACHINES—for use in paper and board mills, also converting plants. Built in widths from 18 inches to 310 inches. Rewind capacities range up to 72 inches diameter. Speeds up to 3000 f.p.m. We build web tension and web guiding controls also. Write for interesting details.



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Humidity
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KLEMP FLOORSTEEL

The Floor Armor that rolls out like a rug.

Klemp Floorsteel repels these attacks without a rut, crack or pothole! Steel mesh filled with concrete or mastic. Easy to lay over old or new floors, concrete or wood. *Exposed top of grid carries the load.*

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Hexteel Heavy Duty Floor Armor—Welded and Riveted Gratings—Stair Treads—Safety Mats. Ask for Catalog.

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EXPORTS TO ALL PARTS OF THE WORLD
PAPER AND BOARD

Old Rags

White, No. 1—
Repacked ..... *2.80 @ —
Miscellaneous .... *2.20 @ —
White, No. 2—
Repacked ..... *2.90 " —
Miscellaneous .... *2.65 " —
Third and Blues—
Repacked ..... *2.20 " —
Miscellaneous .... *1.80 " —
Roofing Rags—
No. 1 ..... *1.55 @ —
No. 2 ..... *1.45 @ —
No. 3 (bagging).. *1.35 " —
No. 4 ..... *1.35 " —
No. 5A ..... *1.35 " —
Old Manila Rope.. 5.75 " —
*OPA Maximum Prices.

Foreign Rags

All Prices nominal

New Rags

New Dark Cuttings.. 2.25 @ 2.40
New Mixed Cuttings. 2.00 " 2.20
New Light Silesias.. 5.50 " 5.75
Light Flannelettes... 5.50 " 5.75
New White Cuttings. 7.00 " 7.50
New Light Oxfords. 4.00 " 4.50
New Light Prints... 3.00 " 3.25

Old Rags

No. 1 White Linens. 7.50 " 8.50
No. 2 White Linens. 6.50 " 7.50
No. 3 White Linens. 4.50 " —
No. 4 White Linens. 2.25 " 3.25
No. 1 White Cotton. 4.25 " 4.75
No. 2 White Cotton. 3.25 " 3.75
No. 3 White Cotton. 2.50 " 3.00
No. 4 White Cotton. 1.90 " 2.20
Extra Light Prints.. 2.00 " 2.40
Ord. Light Prints... 1.75 " 2.15
Med. Light Prints... 1.55 " 1.95
Dutch Blue Cottons. 2.25 " 2.50
French Blue Linens. 3.00 " —
Checks and Blues... 2.00 " —
Linsey Garments.... 1.90 " 2.00
Dark Cottons..... 1.50 " 1.60
Old Shopperies..... 1.30 " 1.45
New Shopperies..... 1.45 " 1.50
French Blues..... 2.25 " 2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—
Foreign .....Nominal
Domestic ..... 4.25 @ 4.35
Wool Tares, light.... 4.25 " 4.50
Wool Tares heavy... 4.50 " 5.00
Bright Bagging..... 4.50 " 4.85
Manila Rope—
Foreign ..... — " —
Domestic ..... *5.75 " —
Jute Threads..... 5.50 " —
No. 1 Sisal Strings.. *4.00 " —
Mixed Strings..... 2.00 " —
*OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut ..... 3.37½ @ —
No. 1 Hard White Envelope Cuts.... 3.12½" —
No. 1 Hard White Shavings, unruled. 2.87½" —
No. 1 Hard White Shavings, ruled... 2.50 " —
Soft White Shavings, one cut..... 2.87½" —
No. 1 Soft White Shavings ..... 2.50 " —
Soft White Shavings, Misc. ..... 2.15 " —
No. 1 Fly Leaf Shavings ..... 1.67½" —
No. 2 Fly Leaf Shavings ..... 1.12½" —
No. 1 Groundwood Fly Leaf Shavings 1.25 " —
No. 2 Mixed Groundwood Fly Leaf Shavings ..... .90 " —
Mixed Colored Shavings ..... .75 " —
Mixed Groundwood Colored Shavings.. .90 " —
Overissue Magazines ..... 1.67½" —
No. 1 Heavy Books & Magazines ..... 1.92½" —
Mixed Books..... 1.10 " —
No. 1 White Ledger.. 2.30 " —
No. 2 Mixed Ledger, colored ..... 2.00 " —
New Manila Envelope Cuttings, one cut.. 2.87½" —
New Manila Envelope Cuttings ..... 2.65 " —
Extra Manilas..... 1.95 " —
Mixed Kraft, Env. & Bag Cuttings..... 2.75 " —
Kraft Envelope Cuttings ..... 3.25 " —
Triple Sorted, No. 1 Brown Soft Kraft. 2.50 " —
New 100% Kraft Corrugated Cuttings.. 2.25 " —
No. 1 Assorted Old Kraft ..... 1.75 " —
New Jute Corrugated Cuttings ..... .90 " —
Old 100% Kraft Corrugated Containers 1.75 " —
Old Corrugated Containers ..... 1.40 " —
Box Board Cuttings. .72½" —
White Blank News.. 1.65 " —
Overissue News..... 1.10 " —
No. 1 News..... 1.00 " —
No. 1 Mixed Paper... .95 " —
Old Corrugated Containers ..... .82½" —
Mill Wrappers..... 1.10 " —

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—
India ..... .21 @ —
White Hemp..... .21 " —
Fine Polished—
Fine India..... .26 " —
Unpolished—
Box ..... .17¼" —
Paper Makers..... .17 " —
Tube Rope..... .19 " —
Wall Paper..... .20½" —
Wrapping ..... .21 " —
Soft Fiber Rope... .19 " —
Cotton ..... .25 " —

(Hard Fiber)

Medium Java..... .18 " —
Mex. Sisal..... .16 " —
Manila ..... — " —

PHILADELPHIA

Domestic Rags (New)

(Price to Mill.)

Shirt Cuttings—
New White No. 1..... .07¼
New White No. 2..... .05¾
Light Silesias..... .05¾
Black Silesias, soft..... .03¾
New Unbleached ..... .07½
Washable Prints ..... .04¼
Washable No. 1..... .03
Blue Overall..... .05½
Cottons—According to grades—
Washable shredding ..... .01¾
Fancy Percales ..... .04¾
New Black Soft ..... .03¾
Khaki Cuttings—
Unbleachable Cotton Cuttings .03½
Bleachable Cotton Cuttings.. .04¼
Men's Corduroy ..... .03½
Ladies' Corduroy ..... .03
Cottonades ..... .03¾

Domestic Rags (Old)

White No. 1—Repacked ..... 3.80 @ —
Miscellaneous No. 1. 3.20 " —
Miscellaneous No. 2. 2.65 " —
White No. 2—Repacked ..... 2.90 " —
Thirds and Blues—
Miscellaneous .... 1.80 " —
Repacked ..... 2.20 " —
Black Stockings—
(Export) .....Nominal
Roofing Stock—
Foreign No. 1....Nominal
Domestic No. 1... 1.55 " —
Domestic No. 2... 1.45 " —
Roofing Bagging.. 1.35 " —
Old Manila Rope... 5.75 " —

Bagging

(F. o. b. Phila.)

Gunny No. 1—
Foreign .....Nominal
Domestic ..... 3.00 " 3.50
No. 1 Clean bright—
Sisal Strings ..... .04
No. 2 Clean bright—
Sisal Strings ..... .03
Sisal Jute ..... .02½ " .02¾
Scrap—
No. 1..... 3.25 " 3.50
No. 2..... 1.75 " 1.90
Wool Tares heavy .. 4.00 " 4.25
No. 1 New Light Burlap ..... 3.00 " 4.00
New Burlap Cuttings 3.75 " 4.00

Old Papers

(F. o. b. Phila)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut ..... 3.37½" —
No. 1 Hard White Shavings, unruled.. 2.87½" —
Soft White Shavings, one cut..... 2.50 " —
White Blank News.. 1.65 " —
Soft White Shavings. Misc. ..... 2.15 " —
No. 1 White Ledger.. 2.30 " —
No. 2 Ledger, colored 2.00 " —
No. 1 Heavy Books & Magazines..... 1.92½" —
Overissue Magazines. 1.67½" —
New Manila Envelope Cuttings ..... 2.65 " —
No. 1 Assorted Old Kraft ..... 1.75 " —
No. 1 Mixed Paper... .95 " —
Box Board Cuttings. .72½" —
Kraft Corrugated Cuttings ..... 2.25 " —
Old Corrugated Containers ..... 1.40 " —
Overissue News..... 1.00 " —
No. 1 News..... 1.00 " —

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices, Baled

No. 1 Hard White Shavings, unruled. 2.87½ @ —
No. 1 Hard White Shavings, ruled... 2.50 " —
Soft White Shavings, Misc. ..... 2.15 " —
No. 1 Fly Leaf Shavings ..... 1.67½" —
No. 2 Fly Leaf Shavings ..... 1.12½" —
No. 1 Groundwood Fly Leaf Shavings 1.25 " —
No. 2 Groundwood Fly Leaf Shavings .90 " —
Mixed Colored Shavings ..... .75 " —
New Manila Envelope Cuts, one cut..... 2.87½" —
Hard White Envelope Cuts, one cut..... 3.37½" —
Triple Sorted No. 1 Brown Soft Kraft. 2.50 " —
Mixed Kraft Env. & Bag Cuttings..... 2.75 " —
Kraft Envelope Cuttings ..... 3.25 " —
No. 1 Heavy Books & Magazines..... 1.92½" —
New Manila Envelope Cuts, one cut..... 2.87½" —
New Manila Envelope Cuttings ..... 2.65 " —
White and Colored Tabulating Cards.. 2.25 " —
Ground Wood Tabulating Cards ..... 1.35 " —
White Blank News.. 1.65 " —
No. 1 Assorted Old Kraft ..... 1.75 " —
No. 1 Mixed Paper... .95 " —
Overissue News..... 1.10 " —
Box Board Cuttings. .72½" —
New Corrugated Cuttings, Kraft..... 2.25 " —
Old 100% Kraft Corrugated Containers 1.75 " —
Old Corrugated Containers ..... 1.40 " —
Jute Corrugated Cuttings ..... 1.07½" —

Bagging

(F. o. b. Boston)

Gunny Bagging—
Foreign .....(nominal)
Domestic ..... — @ 2.50
Sisal Rope No. 1....*4.75 " —
Sisal Rope No. 2....*4.25 " —
Mixed Rope ..... — " 1.55
Transmission Rope—
Foreign .....(nominal)
Domestic ..... 2.75 " 3.00
Manila Rope—
Foreign .....(nominal)
Domestic ..... 5.75 " —
Soft Jute Rope..... 5.25 " —
Jute Carpet Threads. 3.00 " 3.50
Bleachery Burlap.... 8.50 " 9.00
Scrap Burlap—
Foreign .....(nominal)
Domestic ..... — " 2.75
South American ... — " 3.00
Wool Tares—
Foreign .....(nominal)
Domestic ..... 4.25 " —
Aust. Wool Pouches.. — " 3.50
New Zealand Wool Pouches ..... — " 3.50
New Burlap Cuttings 4.75 " 5.00
Heavy Baling Bagging 4.00 " 4.25
Paper Mill Bagging.. 2.50 " 3.00
No. 2 Roofing Bagging 1.35 " —
*OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—
New Light Prints. .04½ @ .04½
Fancy Percales.... .04¼" .04¼
New White No 1. .06¼" .07
New Light Flannelettes ..... .05½" .06
Canton Flannels, Bleached ..... .06 " .06½
Underwear Cutters, Bleached ..... .06¼" .06½
Underwear Cutters, Unbleached ..... .05¼" .06
Silesias No. 1..... .06 " .06½
New Black Silesias.. .03 " .03½
Red Cotton Cuttings .03½" .04
Soft Unbleached ... .06½" .06½
Blue Cheviots .... .05½" .06
Fancy ..... .02¼" —
Washable ..... .02¼" —
Khaki Cuttings .... .02¼" .03
O. D. Khaki..... .03½" .03½
Corduroy ..... .03¼" .03½
New Canvas ..... .06¼" .06½
B. V. D. Cuttings... .06¼" .06½

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—
Repacked ..... 3.80 @ —*
Miscellaneous .... 3.20 " —*
White No. 2—
Miscellaneous .... 2.65 " —*
Twos and Blues, Repacked ..... 2.20 " —*
Old Blue Overalls... 2.25 " 2.50
Thirds and Blues, Repacked ..... 2.20 " —*
Miscellaneous ..... 1.80 " —*
Black Stockings .... 3.50 " 4.00
Roofing Stock—
No. 1 ..... 1.55 " —*
No. 2 ..... 1.45 " —*
No. 3 ..... 1.35 " —*
No. 4 ..... 1.35 " —*
No. 5, Quality A.. 1.35 " —*
Quality B.. 1.20 " —*
Quality C.. .95 " —*
*Old Manila Rope.. 5.75 " —
*OPA Maximum Prices.

Foreign Rags

(F. o. b Boston)

Canvas .....(nominal)
Dark Cottons .....(nominal)
Dutch Blues .....(nominal)
New Checks and Blues..(nominal)
Old Fustians .....(nominal)
Old Linsey Garments....(nominal)
New Silesias .....(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices, Baled

Shavings—
No. 1 Hard White Envelope Cuts, one cut ..... 1.37½" —
No. 1 Hard White Shavings, unruled. 2.87½" —
No. 1 Soft White Shavings ..... 2.50 " —
No. 1 White Ledger.. 2.30 " —
No. 1 Heavy Books & Magazines..... 1.92½" —
White Blank News.. 1.65 " —
Mixed Kraft Env. & Bag Cuttings... 2.75 " —
No. 1 Assorted Old Kraft ..... 1.75 " —
Overissue News..... 1.10 " —
No. 1 News..... 1.00 " —
No. 1 Mixed Paper... .95 " —
No. 1 Rooing Rags. 1.55 " —
No. 1 Roofing Bags. 1.45 " —